

职业院校汽车类专业人才培养改革创新示范教材

现代汽车专业英语

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内 容 简 介

本教材依据教育部《中等职业学校专业英语教学大纲》和《中等职业学校汽车运用与维修专业教学指导方案》编写。

本书包括 6 章,共 25 课,按照开设 1 年、72 个学时设计,配有教参和学生练习。

内容主要包括:缤纷的汽车世界:汽车的主要生产厂家;汽车的起源和发展;汽车的分类;汽车的基本构造;汽车的工作原理;汽车技术数据;汽车发动机;汽车的车身;汽车仪表;汽车电气设备;汽车底盘;汽车的保养;汽车常见故障;汽车安全防护系统;新能源汽车;未来的汽车;安全驾驶等。

在编写过程中,由于每章内容较多,所以只会涉及其中部分内容,老师在讲解时可适当增删。总之,目的是让学生掌握一些专业英语词汇和知识,以便为其阅读简单的专业英语资料以及进一步深造奠定基础。

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前言



目前我国汽车工业飞速发展，甚至其发展速度超过了国外。在大中城市，几乎大部分家庭都拥有了自己的轿车。汽车的数量在不断增加，仅北京就超过了 500 多万辆，但汽车行业的技能型人才却极度缺乏。为此，很多中、高等职业院校都开设了汽车的相关专业。

为了帮助汽车专业的学生进一步提升英语的实际运用能力，在电子工业出版社的安排下，我们组织国内几所汽车专业办得比较好的中、高职院校，抽调有多年汽车英语实践教学经验的老师，根据企业用人标准和中、高职学生的特点，有针对性地编写了这本教材。

本教材具有以下特点：

1. 时代感强

选材注重时代感，注重语言的基础、通俗和实用。

2. 图文并茂

为了增强教学的直观性，降低学习难度，提高趣味性，我们配发了多幅图片，书后附有每课的重点参考译文。

3. 知识系统

汽车理论是系统的，那么汽车英语也不能断章取义，所以，我们这本教材也具备了系统的知识体系。

4. 任凭选择

学校可以根据不同专业所开设汽车英语的课时数，有选择地选学章节和篇目，做到有的放矢。

5. 适用面广

本书虽是为汽车专业的中职学生编写的，但它也适用于汽车专业的高职学生、4S 店的工作人员和其他汽车英语爱好者。

6. 附有 PPT

本书 PPT 图文并茂，对老师的教学和学员自学将起到很好的辅助作用。

本书由北京商贸学校的孙旭担任主编，由张家口北方机电工业学校的张庆将、张家口市职教中心杨彩云、北京信息职业技术学院的郑利霞担任副主编。为了保证教材的质量，我们还专门聘请了现供职于河北联合大学外语学院的王静存教授最后审定了本书。

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建议教材使用学时为 72 ~ 96 学时，请各校根据自己专业实际情况选择使用。

在教材编写过程中，我们得到了参编各校领导和出版社编辑以及石家庄三职中领导的大力支持，也得到了主审王教授的热情帮助，对此，我们表示衷心的感谢！同时，我们也向使用这本教材的教师和同学致以诚挚的谢意！

本书试图体现新的编写思路和模式，努力编好每一课，但由于资料匮乏，加之编者专业水平有限，书中难免存在不妥或谬误之处，对此，恳请广大师生和读者批评指正！

编者

2015 年 6 月北京

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Chapter 1

Automobile Overview (汽车概述)

Lesson 1: Car Logo (车标)

Section one: Identification of car logos

Task 1: Talking and Practicing

Look at the following logos and give the names of the automobiles.



A



B



C



D



E



F



G



H



I



J



L I N C O L N

K



T O Y O T A

L

What is a logo?

A logo is a graphical element that, together with its logo type, forms a trademark or commercial brand. Typically, a logo's design is for immediate recognition. The logo is one aspect of a company's commercial brand, or economic or academic entity, and its shapes, colors, fonts and images usually are different from others' in a similar market.

Task 2: Enjoy the logos of automakers and make a dialogue on the history of logos with your partner.

A: Can you tell me what the name of this car is?

B: Yes. It is called Ford. Ford is from America.

A: I like it. Do you know the history of this logo?

B: Sorry, I don't. But I know the history of Cadillac's logo.

Cadillac is an American automobile manufacturer based in Detroit (Michigan). In 1998, the group decided to change the traditional wreath and crest logo. The new logo shield wears the colors of the Cadillac tradition: red, silver and blue, black and gold on a platinum background. Do you know the history of Ferrari's logo?

A: Yes. It means...

Section two: What's the name of the car?

Dialogue A

A customer wants to buy a new car, so he walks into a 4S (sale, spare part, service, survey) store, and a salesman received him.

Salesman: Good morning, sir! Can I help you?

Customer: Yes. Um...Can you tell me where the car called *Benz* is?

Salesman: Sure. The car is over there. This way, please.

Salesman: This is *Benz*, sir! Look at the star, the logo of *Benz*. The popular saying of the three-pointed star is that it symbolized the designer's ambition of making vehicles "on land, on water and in the air."

Customer: Wow! It is cool! It has a straight forward atmosphere look.

Salesman: Yes. Would you like to look at the interior?

Customer: Can I?

Salesman: Are you satisfied with this car?

Customer: Yeah! But I should consult it with my wife. After all, it is not insignifi-

cant, is it ?

Salesman: It doesn't matter. See you next time.

Task 1: Answer the following comprehending questions.

What kind of car does the customer want to buy?

_____.

What is the meaning of the three-pointed star?

_____.

Why doesn't the customer buy the car?

_____.

Dialogue B

Task 2: Read the dialogues, fill in the missing information according to the given words, and practice them with your partner.

brakes	brand	overseas	cheap	transmission
--------	-------	----------	-------	--------------

Laurence: What kind of a car do you have?

Sony: An old one.

Laurence: I know it's old, but what name is it?

Sony: It's a Chevrolet. Why do you ask? You are going into the car business?

Laurence: Nothing like that. My cousin is going to take a job 1 and he can't take his car with him, so he's going to sell it. It is 2 and practically new.

Sony: Well, I have been thinking about getting a newer car. I can't afford a 3 new one.

Laurence: Would you like to look at my cousin's car?

Sony: Is it a four-door or a two-door?

Laurence: It's a coupe with a vinyl roof.

Sony: Does it have automatic 4 ?

Laurence: Yes, and it also has power steering, power 5, and air conditioning.

Sony: I guess I might take a look at it. How much is he asking?

Laurence: I don't know for sure, but he'll make you a good deal.

Sony: Okay. Set it up for me to see it, if you can.

Reading Materials A: Logos of Automakers

Different vehicles have different logos. Logo is the symbol of an automaker or a series of automobiles. Let's get familiar with some of the famous logos of automakers in the world.

I'm sure that you must have seen these trademarks on streets. They are all the logos of American automakers. The left one is the logo of GM Company, the middle one belongs to the Chrysler Company, while the right one is the symbol of Ford Company. Their products have been in the Chinese market for a long time, and they all have joint ventures with the Chinese auto enterprises.

You will not be unfamiliar with these trademarks. "VW" is the abbreviation of the "Volkswagen", a German automobile manufacturer. More and more Chinese are getting to know this company. Since the establishment of the first joint venture in Shanghai, Volkswagen has made great progress in developing the Chinese market. Now VW maintains good cooperation with Chinese enterprises. Nearly 30% of the cars you see on the street are products of VW. From the early Santana to the latest Audi A8, from Golf, Jetta to Baro and Passat, VW has become a symbol of speed, safety and ease.

New Words:

1. logo	['lɒgəu]	n.	商标，徽标；标识语
2. symbol	['sɪmbəl]	n.	象征；符号；标志
3. trademark	['treɪdmɑ:k]	n.	[贸易]商标；商标权
4. product	['prɒdəkt, -ɪkt]	n.	产品；结果；乘积；作品
5. venture	['ventʃə]	vi.	冒险；投机
		n.	企业；风险；冒险
6. enterprise	['entəpraɪz]	n.	企业；事业；进取心；事业心
7. abbreviation	[ə,bri:vi'eɪʃən]	n.	缩写；缩写词
8. manufacturer	[ˌmænju'fæktʃərə]	n.	制造商；厂商
9. establishment	[i'stæblɪʃmənt]	n.	确立，制定；公司；设施
10. maintain	[meɪn'teɪn]	vt.	维持；继续；维修；主张；供养
11. cooperation	[kəʊ,ɒpə'reɪʃən]	n.	合作，协作；协力
12. latest	['leɪtɪst]	adj.	最新的，最近的；最迟的
		n.	最新的事物
		vt.	最新地
13. safety	['seɪftɪ]	n.	安全；保险；安全设备；保险装置

14. ease	[i:z]	vt.	减轻，缓和；使安心
		vi.	减轻，缓和；放松；灵活地移动
		n.	轻松，舒适；安逸，悠闲

Notes:

1. symbol n. [C]

1) 象征，标志 [(+of)]

The white bird is a symbol of freedom.

这白色的鸟是自由的象征。

2) 记号，符号 [(+for)]

We use x as the symbol for an unknown quantity.

我们用 x 表示一个未知数。

2. series n. [C] [M]

连续；系列 [(+of)]

Then began a series of wet days that spoiled our vacation.

之后就是一连串的下雨天，把我们的假期弄得一团糟。

3. trademark n. [C]

1) 商标

Products bearing famous trademarks sell well.

标有名牌商标的产品畅销。

2) (人或物的) 标记，特征

Beautiful homes and gardens are trademarks of the south.

美丽的住房和花园是南方的特征。

4. venture n. [C]

1) 冒险；冒险事业，投机活动

They were the astronauts on the first venture to the moon.

他们是首次登月球探险的宇航员。

2) 投机活动；企业

He has started a joint venture in Singapore.

他已在新加坡办起一家合资公司。

5. abbreviation n.

1). 缩写字，缩写式 [C]

“Mr.” is the abbreviation of “Mister”.

“Mr.” 是 “Mister” 的缩写。

2) 缩写, 省略; 缩短 [U]

6. maintain vt.

1) 维持; 保持; 使继续

Ann and Mary maintained their friendship for the next thirty years.

安妮和玛丽在此后的三十年中一直保持着她们之间的友谊。

2) 维修, 保养

Frank maintains his car very well.

弗兰克把自己的车子保养得很好。

7. enterprise n.

1) 冒险精神; 进取心, 事业心 [U]

Tom is a man of great enterprise.

汤姆很有进取精神。

2) 企业, 公司 [C]

This enterprise is doing a good business.

这家企业生意兴隆。

8. dealer n. 经销商; 商人

Mr. Brown is a dealer in auto industry.

布朗先生是个汽车经销商。

9. engage vt. 吸引, 占用; 使参加; 雇佣; 使订婚; 预定

vi. 从事; 答应, 保证; 交战; 啮合

My father has engaged in farming for 20 years.

engage in 从事

我的父亲从事耕作已有二十年。

10. establish vt. 建立; 创办; 安置

Volkswagen has established the first joint venture in shanghai.

大众汽车已在上海建立了第一家合资公司。

11. joint venture 合资公司

Their products have been in the Chinese market for a long time, and they all have joint ventures with the Chinese auto enterprises.

他们的产品在中国上市已经有很长时间了, 并且他们与中国的汽车企业建立了合资公司。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Logo is the symbol of a series of automobiles.

()

2. Most people are familiar with the trademarks “VW”. ()
3. “Volkswagen” is an American automobile manufacturer. ()
4. Santana, A8, Golf, Jetta, Baro and Passat all belong to VW. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information from the passage and then try to retell the passage.

ventures	French	abbreviation	symbol
manufacturer	focuses	trademarks	

Logo is the 1 of an automaker or a series of automobiles. There are different kinds of logos, which is also known as 2 . For example, VW is the 3 of Volkswagen, a German automobile 4 while Peugeot and Citroen belong to 5 auto companies. Nowadays, China also has many large automobile enterprises, like Beijing Jeep Corporation, which 6 on jeep production. Moreover, we have established many corporations with famous automakers worldwide. For example, GM Company has joint 7 in China for a long time.

Task 3: Translate the following sentences into Chinese.

1. Logo is the symbol of an automaker or a series of automobiles.

2. Let's get familiar with some of the famous logos of automakers in the world.

3. Their products have been in the Chinese market for a long time, and they all have joint ventures with the Chinese auto enterprises.

4. Since the establishment of the first joint venture in Shanghai, Volkswagen has made great progress in developing the Chinese market.

Reading materials B: The brief history of automobile

The history of the automobile begins as early as 1769, with the creation of steam-powered automobiles capable of human transport. Steam-powered self-propelled vehicles are thought to have been devised in the late 18th century. Nicolas-Joseph

Cugnot demonstrated his fardier a vapeur, an experimental steam-driven tractor, in 1770 and 1771.

By 1784, William Murdoch had built a working model of a steam carriage in Redruth, and in 1801 Richard Trevithick was running a full-sized vehicle on the road in Camborne. Such vehicles were in vogue for a time, and over the next decades such innovations as hand brakes, multi-speed transmissions, and better steering developed.

At the 1900s some steam-powered self-propelled vehicles were commercially successful in providing mass transit, until a backlash against these large speedy vehicles resulted in passing a law, the Locomotive Act, in 1865 requiring self-propelled vehicles on public roads in the United Kingdom be preceded by a man on foot waving a red flag and blowing a horn. The law was not repealed until 1896, although the need for the red flag was removed in 1878.

German engineer Karl Benz, inventor of numerous car-related technologies, is generally regarded as the inventor of the modern automobile. The four-stroke petrol (gasoline) internal combustion engine that constitutes the most prevalent form of modern automotive propulsion is a creation of German inventor Nikolaus Otto.

Early attempts at making and using internal combustion engines were hampered by the lack of suitable fuels, particularly liquids, and the earliest engines used gas mixtures. A later version was propelled by coal gas. Karl Benz built his first automobile in 1885 in Mannheim. Benz was granted a patent for his automobile on 29 January 1886, and began the first production of automobiles in 1888.

Soon after, Gottlieb Daimler and Wilhelm Maybach in Stuttgart in 1889 designed a vehicle from scratch to be an automobile, rather than a horse-drawn carriage fitted with an engine.

New Words:

1. creation	[kri:'eiʃən]	n.	创造，创作；创作物，产物
2. commercial	[kə'mæ:ʃəl]	adj.	商业的；营利的；靠广告收入的
		n.	商业广告
3. repeal	[ri'pi:l]	vt.	废除；撤销；废止；放弃；否定
		n.	废除；撤销
4. propulsion	[prəu'pʌlʃən]	n.	推进；推进力
5. hamper	['hæmpə]	vt.	妨碍；束缚；使困累

6. scratch [skrætʃ]

- n. 食盒，食篮；阻碍物
- n. 擦伤；抓痕；刮擦声；乱写
- adj. 打草稿用的；凑合的；碰巧的
- vt. 抓；刮；挖出；乱涂
- vi. 抓；搔；发刮擦声；勉强糊口；退出比赛

Lesson 2: Classification of Vehicles (汽车的分类)

Section one: How many types of vehicles do you know in English?

Task 1: Look at the following pictures and then name the vehicles.





1. Racing car
2. Trailer
3. Truck
4. Jeep
5. Bus
6. Coach
7. Taxi
8. SUV=Sports Utility Vehicle
9. MPV=Multi Purpose Vehicle
10. RV=Recreation Vehicle

Task 2: Read and match. Read the short passage and fill in the Chart.

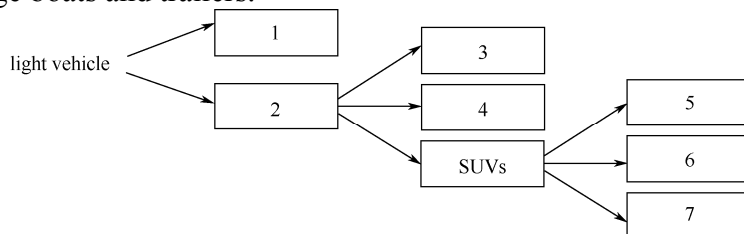
For classification purposes, automobile manufacturers have historically divided their light vehicle products into two categories, Automobiles and Light Trucks. Light Trucks include Mini Vans, SUVs, and Pickup Trucks. SUVs come in three sizes:

Small sizes are Toyota RAV4, Honda CRV, Daewoo Korando, Chevrolet Tracker, and Suzuki Grand Vitara.

Medium sizes are Dodge Durango, BMW X5, Mercedes-Benz M-Class, Lexus RX300, Nissan Pathfinder, Nissan Xterra.

Large sizes are Toyota Land Cruiser, Lexus LX470, Toyota Sequoia, Lincoln Navigator, Ford Expedition, Ford Excursion, Land Rover, Chevrolet Suburban.

If you transport large amounts of cargo or need room for more than seven adults, a full-size van is your only option. They're available with and without windows and in payload capacities of over one ton. Extended vans can seat up to 15 adult passengers. Towing packages with 8- or 10-cylinder engines will allow these rear-wheel-drive vehicles to tow large boats and trailers.



Section two: Classification of motor vehicles

Dialogue A: How can I identify different types of cars?

Jeff: Hello, this is the Auto Knowledge Information Centre. May I help you?

Antony: Yeah. If I want to tell what the year and name of a car is, what should I learn? I know there are people who can just name types of cars after seeing them. How can they do that?

Jeff: Well, it's not that easy these days because all the cars look alike. You would have to study cars for a long time to know what year and name a car is.

Antony: Can I recognize the different cars by their shapes?

Jeff: If you begin to study car manufacturers, you will understand the shapes they are known for. You know a Benz for its shape and overall look of luxury, and you will also know an Audi for its sharp European look. Surf the web, and make note of shapes, and car details, it'll tell you everything.

Antony: Thanks a lot for your valuable advice.

Task 1. Answer the following questions according to the dialogue.

1. Does Antony want to buy a car?

2. Does Jeff tell Antony how to tell the names of cars?

3. How do people recognize the different cars by their shapes?

4. What do you think Jeff's job is?

5. Which car is known for its European look?

Task 2: True or False questions

1. Some people can quickly name types of cars after seeing them. ()

2. Only by studying a web site can a person know the year of a car. ()

3. Different cars have different shapes, so you can remember them all. ()

4. Car manufacturers can tell you the details of a car. ()

Dialogue B: Sports car

Task 3: Read the following dialogue about sports car, then answer the questions below.

Mike: What kind of car would you like to buy if you had enough money?



Sam: If I had enough money, I would prefer to buy a sports car rather than an SUV.

Mike: Why? Can you tell me a reason?

Sam: First of all, I don't think an SUV seem nice or impressive to me. Secondly, an SUV doesn't have good gas mileage. Finally, an SUV is so large that it's hard to park. A sports car, on the other hand, is fun to drive for me. And it is small and convenient to park. In fact, a sports car goes fast but it runs less fuel than an SUV does. In a word, I would prefer to buy a sports car rather than an SUV if I had won a lot of money.

Mike: Well, I'm 18 years old and I would like to buy a sports car, what do you suggest me, BMW or Mercedes-Benz?

Sam: I suggest you grow a brain and use your money for something that will increase in value but not decrease. Start out with a simple car, and use the majority of your money to sort yourself out in a property that you own (house, flat, townhouse, etc).

1. Which one does Sam think have a better appearance, a sports car or an SUV?
2. When Sam wants to find a place to park his car, which one is easy, a sports car or an SUV?
3. If you want to save money on oil expense, which one will you buy, a sports car or an SUV?
4. What is the Sam's opinion about buy a sports car?
5. What is the Sam's suggestion?

Reading Materials A: Classification of motor vehicles

The automobile has been invented for more than 100 years. Today it can be said that wheels run the world. There are numerous types of automobiles found in different parts of the world. The various types of automobiles are classified in different countries. Here is just an example of types of automobiles.

According to their application , automobiles are classified as trucks , passenger, and

special-purpose vehicles. The trucks may be provided with beds to transport different goods or high special-purpose bodies such as dump bodies to transport loose and viscous cargo, tank bodies for liquids, refrigerator vans for the perishable, etc. Aside from a body type, trucks are classified according to their load-carrying capacity and cross-country capacity.

The passenger vehicles are divided into cars seating from one to six men, and buses. The buses are subdivided into city and intercity ones. Tourist buses make a separate group. According to their length, buses are classified as minibuses, small, large, and articulated buses.

The special-purpose automobiles are equipped for performing particular tasks. Among them are fire and garbage trucks, ambulances, towers, water tanks, etc.

New Words:

1. classification	[ˌklæsɪfɪˈkeɪʃən/]	n.	分类；类别，等级
2. wheel	[hwi:l]	n.	车轮；方向盘；转动
		vt.	转动；使变换方向；给……装轮子
		vi.	旋转；突然转变方向；盘旋飞行
3. numerous	[ˈnju:mərəs]	adj.	许多的，很多的
4. classify	[ˈklæsɪfaɪ]	vt.	分类；分等[过去式 classified, 过去分词 classified 现在分词 classifying]
5. application	[ˌæpliˈkeɪʃən]	n.	应用；申请；应用程序；敷用
6. passenger	[ˈpæsɪndʒə]	n.	旅客；乘客；过路人；[俚]碍手碍脚的人
7. provide	[prəuˈvaɪd]	vt.	提供；规定；准备；装备
		vi.	规定；抚养；作准备
8. transport	[trænsˈpɔ:t]	n.	运输；运输机
		vt.	运输；流放
9. dump	[dʌmp]	vt.	倾倒；倾卸
		vi.	倒垃圾
		n.	垃圾场
10. loose	[lu:s]	adj.	宽松的；散漫的；不牢固的；不精确的
		vt.	释放；开船；放枪

11. viscous	['viskəs]	vi. 变松；开火
12. refrigerator	[ri'fridʒəreitə]	adv. 松散地
13. perishable	['perɪʃəbl]	n. 放纵；放任；发射
14. capacity	[kə'pæsəti]	adj. 黏性的；黏的
15. subdivide	[,sʌbdi'vaɪd, 'sʌbdivaɪd]	n. 冰箱，冷藏库
16. intercity	[,ɪntə'siti]	adj. 易腐坏的；易毁灭的；会枯萎的
17. articulate	[ɑ:'tɪkjʊlət, ɑ:'tɪkjuleɪt]	n. 容易腐坏的东西
18. ambulance	['æmbjʊləns]	n. 能力；容量；资格，地位；生产力
19. garbage	['gɑːbɪdʒ]	vi. 细分，再分
		vt. 把.....再分，把.....细分
		adj. 城市间的
		vi. 清晰地发（音）；明确有力地表达
		[语]发音；清楚地讲话
		adj. 发音清晰的；口才好的
		n. 救护车；战时流动医院
		n. 垃圾；废物

Notes:

1. more than 多于，比.....多，超出

That would be more than I have expected.

那已经比我期望的还要多了。

However, they often talk more than they do.

然而，他们常常说的比做的多。

2. according to: 根据，按照，取决于

You build a brand according to what is and what should be.

你建立品牌的根据是“它是什么”和“它应该是什么”。

You can choose one of these according to your application domain.

您可以根据您的应用程序域选择其中之一。

3. provide sb. with sth. 供给

I provide him with all his rights.

我向他提供了他的所有权利。

All could provide with inspiration and strength to human.

均能给人以鼓舞和力量。

4. on the other hand 另一方面

On the other hand we have much work to do.

另一方面，我们有许多工作要做。

5. have/has been invented...

现在完成时被动语态表示发生在过去的动作，它强调动作已经完成以及动作对现在造成的影响，并且主语与谓语动词之间为被动关系。现在完成时的结构为 have/has done，而被动语态的结构为 be+v-ed，故现在完成时的被动语态则可以两者相结合，即用 have/has been+v-ed 结构构成。

(1) 现在完成时被动语态的肯定式。

主动句：He has repaired the machine for two hours.

他修理这台机器已有两小时了。

被动句：The machine has been repaired for two hours.

这台机器已修了两小时了。

主动句：The teacher has borrowed the books.

老师把那些书借走了。

被动句：The books have been borrowed by the teacher.

那些书被老师借走了。

(2) 现在完成时被动语态的否定式。

由“have/has+not+been+及物动词的过去分词”构成。例如：

The car has not been repaired. 这辆汽车还没有修好。

(3) 现在完成时被动语态的一般疑问式。

由“have/has+主语+been+及物动词的过去分词”构成。例如：

①—Has her work been finished? 她的工作完成了吗?

—Yes, it has. 是的，完成了。

②—Have the cars been repaired? 这些汽车修好了吗?

—No, they haven't. 不，还没有。

(4) 现在完成时被动语态的特殊疑问式。

由“疑问词+have/has+主语+been+及物动词的过去分词”构成。例如：

How long has her work been finished?

她的工作完成有多久了?

Who has been helped by the new computer?

谁已经得到了这台新计算机的帮助?

How many new words have been learned by the students?

这些学生已经学会了多少单词？

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Wheels run the world means the world is running on the wheels. ()
2. There are many different types of automobiles in different countries. ()
3. According to their function , automobiles are classified as trucks , passenger , and special-purpose vehicles. ()
4. Trucks can use their dump bodies to transport water but can not transport oil. ()
5. City bus, intercity bus and tourist buses make the same group. ()
6. Ambulances are automobiles equipped for performing particular tasks. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information from the passage and then try to retell the passage.

minibuses	passenger	trucks	load-carrying	cross-country
particular	tasks	small	large	articulated
special-purpose				

According to their application , automobiles are classified as 1, 2, 3 vehicles. The trucks may be provided with beds to transport different goods or high special-purpose bodies such as dump bodies to transport loose and viscous cargo, tank bodies for liquids ,refrigerator vans for the perishable ,etc. Aside from the body type, trucks are classified according to their 4 capacity and 5 capacity.

The passenger vehicles are divided into 6 from one to six men and buses. The buses are subdivided into city and intercity ones. Tourist buses make a separate group. According to their length, buses are classified as 7, 8, 9, 10 buses.

The special-purpose automobiles are equipped for performing 11 Among them are fire and garbage trucks, ambulances, towers, water tanks, etc.

Task 3: Translate the following sentences into Chinese.

1. If I had won money, I would prefer to buy a sports car rather than an SUV.

_____。

2. Today it can be said that wheels run the world.

3. The trucks may be provided with beds to transport different goods or high special-purpose bodies such as dump bodies to transport loose and viscous cargo, tank bodies for liquids, refrigerator vans for the perishable, etc.

4. Don't become one of the idiots that buy an expensive car at a young age and then still living at home with parents at the age of 35 only because he used all his money to have a showoff car.

5. The special-purpose automobiles are equipped for performing particular tasks.

Reading materials B: Benefits of selling a car online

The key benefit of advertising your car online is that you can expose the offer to a large number of people across the whole of the country.

The accessibility of the internet means that although you may be the opposite side of the country to your buyer, they can still view your car and decide if it is worth the traveling needed to buy it.

With an online advert you are not restricted to local areas as you would be with magazines and (particularly) newspapers.

Cheaper than printed listings. An advert with an online car listing site is cheaper than an equivalent printed listing in a magazine or newspaper. The overhead costs of a website list are considerably lower than those of a printed list, meaning that lower (and occasionally free) prices are common.

Searching for a particular car is much easier online. Where as a car listings magazine may have to create pages dedicated to certain sizes of car, prices, or particular makes; an online list can be organized and categorized according to many different areas.

Someone searching for your car online can simply enter the make, model, and ap-

proximate age or price of the car, and be given a specifically relevant list instantly.

However, someone searching for your type of car in a magazine or newspaper may struggle to find it quickly, as they may have to flick through pages for hours finding the right car in a pile of other irrelevant cars. The pictures in some magazines make it a bit easier, but they are still nowhere near as quick and effective as an online search.

An online advert means that you are much less constrained for space than with newspapers or magazines for which space is an expensive premium. Many printed listings will charge you by the word, whereas this almost never the case with online adverts.

Although there will be restrictions on the number of words you can use, and on the size of any photo(s), online listings are still much more open with the amount of space you can use than printed listings.

This means that online adverts can include more of the details about the car and its specifications, making it more attractive to those that view the advert.

The main disadvantage of online adverts is that you can receive lots of replies from people who are too far away to realistically want to buy the car.

As the internet is accessible by people across the whole country, you may find that you receive more, but not necessarily relevant calls from those who are interested but not really interested in traveling to view and buy it.

This means some time there could be lost answering calls that are going to lead to the car being sold.

There are solutions to help this however. Most online listing sites require a postcode to carry out a search. This means that cars can be listed according to how far away they are from the person looking to buy, helping ensure that they do not call people whose cars are not realistically going to buy.

There are also a number of checks and inspections that can be bought, allowing a car that is too far away to be viewed to be checked by a third party to ensure that it is of a reasonable standard / matches the descriptions.

New Words:

- | | | | |
|------------------|------------------|------|-------------|
| 1. accessibility | [æk,sesə'biləti] | n. | 易接近；可亲；可以得到 |
| 2. restrict | [ri'strikt] | vt. | 限制；约束；限定 |
| 3. equivalent | [i'kwivələnt] | adj. | 等价的，相等的；同意义 |

		n.	等价物，相等物
4. overhead	['əʊvəhed, ,əʊvə'hed]	adv.	在头顶上；在空中；在高处
		adj.	高架的；在头上的；在头顶上的
		n.	天花板；[会计]经常费用
5. categorize	['kætigəraiz]	vt.	分类
6. approximate	[ə'prɒksimit]	vt.	近似；使.....接近；粗略估计
		vi.	接近于；近似于
		adj.	近似的；大概的
7. irrelevant	[i'reləvənt]	adj.	不相干的；不切题的
8. constrain	[kən'strein]	vt.	驱使；强迫；束缚
9. premium	['pri:miəm]	n.	保险费，额外费用；奖金
10. inspection	[in'spekʃən]	n.	视察，检查

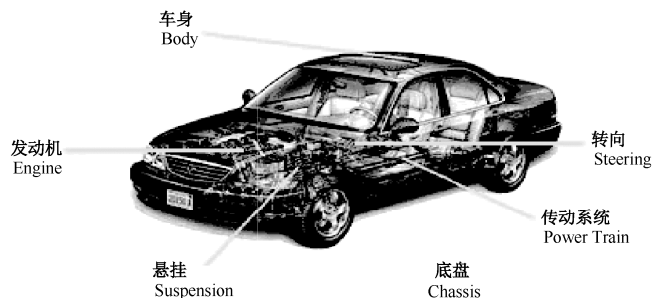
Lesson 3: Automobile Components (汽车元件)

Section one: Components of automobile in English

Task 1: Talking and Practicing. Look at the following picture and discuss the following questions with your partners.

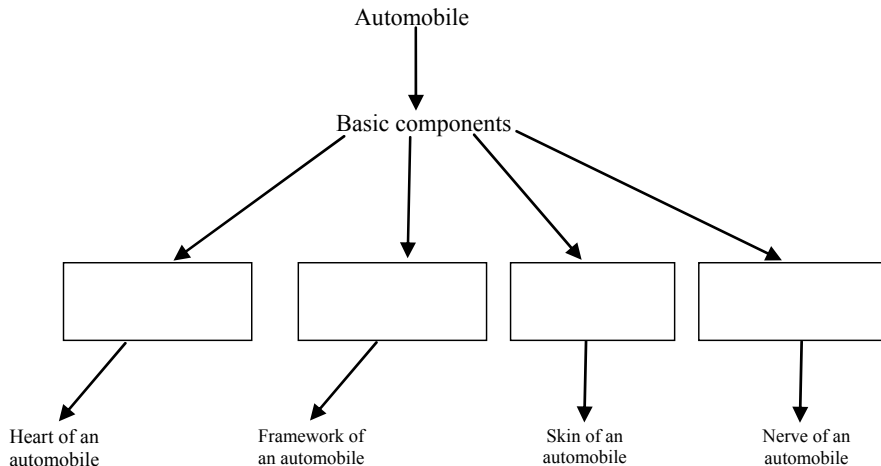
1. What does the car consist of ?

2. What are the four major components of a car?



Section two: Suspension System

Task 2: Read and Fill in the chart. You will read a dialogue about the components of an automobile. Fill in the correct components of an automobile according to the reading materials.



Dialogue A

Jane: Hello, This is Jane.

Mike: Oh, hello, Jane.

Jane: Listen, Mike. I've got a problem.

Mike: What is it?

Jane: My car can't move again. Its engine is out of order again.

Mike: When did it first broken down?

Jane: About ten days ago. Over the last few days, it's been making aloud noise now and then. Sometimes it works and sometimes it doesn't. It's very annoying.

Mike: You really need to exchange it for a new one.

Jane: Yes, I know. But look, I've got to pick up Tom at the airport. Can I use you car now?

Mike: Of course you can. I don't need it today. You can come around at any time.

Jane: I'll be around in about an hour. Thanks a lot.

Mike: My pleasure. See you then.

Dialogue B

Read the dialogue and fill in the missing words in the blanks.

Hans: Do you know how many components an automobile consists of?

Maria: Four. They are 1, chassis, body and electrical system.

Hans: Is an engine very important? Why?

Maria: Yes. The engine is the source of power that makes the wheels rotate and the car move. So we call it the heart of an automobile.

Hans: How many systems does the 2 include?

Maria: Four systems. Chassis is the framework of an automobile. It includes the power train or transmission system, the suspension system, the steering system and the brake system.

Hans: What about the 3? Is it the skin of an automobile?

Maria: You are right. And the nerve of an automobile is the 4.

Hans: Thank you for explaining these for me.

Maria: You are welcome.

Task 1: True or False Questions.

1. Mike and Jane are husband and wife. ()
2. They are talking on the phone about an accident. ()
3. The engine makes some noises before breaking down. ()
4. Jane will buy a new car after she picks up Tom. ()
5. Jane will borrow Mike's car one hour later. ()
6. Jane's car has been broken down for many times. ()

Task 2: Read the passage and fill in the missing information with the given words.

weight	Suspension	travel	wheel	tires	purpose	cushioning
--------	------------	--------	-------	-------	---------	------------

Components that support the total vehicle are called 1 system. The suspension system includes springs, shock absorbers, torsion bars, axles and connecting linkages. It is located between the 2 axles and the vehicle body, also called frame. The 3 of suspension system is to support the 4 of vehicle; cushion bumps and holes in the road; maintain traction between the tires and the road; hold the vehicle in alignment.

Suspension system allows the vehicle to 5 over rough surfaces with a minimum of up and down body movements. It also allows the vehicle to corner with minimum roll or tendency to loose traction between the 6 and road surface. The suspension provides a 7 effect action, therefore, the passengers or move up and down they meet bumps and holes in the road.

Task 3: Talking and Practicing

Make dialogues with your partner about the different parts of a car according to the information provided.

Reading Materials A: What is the suspension system?

Automobile suspension system has two basic functions, to keep car's wheels in firm contact with the road and to provide comfortable ride form the passengers. A lot of the system's work is done by the spring. Under normal conditions, the springs support the body of the car evenly by compressing and rebounding with every up-and-down movement. This up-and-down movement, however, causes bouncing and swaying after each bump and is very uncomfortable to the passenger. These uncomfortable effects are reduced by the shock absorbers.

Suspension, when discussing cars, refers to the use of the front and rear springs to suspend a vehicle's "sprung" weight. The springs used on today's cars and trucks are constructed in a variety of types, shapes, sizes, rates and capacities. Types include leaf springs, coil springs, air spring, and torsion bars. They may be paired off on vehicles in various combinations and are attached to vehicles by several different mounting techniques.

New Words:

1. basic	['beisik]	adj.	基本的；基础的
		n.	基础；要素
2. function	['fʌŋkʃən]	n.	功能；函数；职责；盛大的集会
		vi.	运行；活动；行使职责
3. comfortable	['kʌmfətəbl]	adj.	舒适的，舒服的
		n.	盖被
4. system	['sistəm]	n.	制度，体制；系统；方法
5. spring	[sprɪŋ]	n.	春天；弹簧；泉水；活力；跳跃
		vi.	生长；涌出；跃出；裂开

		vt.	使跳起；使爆炸；突然提出；使弹开
6. normal	['nɔ:məl]	adj.	正常的；正规的，标准的
		n.	正常；标准；常态
7. evenly	['i:vənli]	adv.	均匀地；平衡地；平坦地；平等地
8. compress	[kəm'pres, 'kɒmpres]	vi.	受压缩小
		vt.	压缩，压紧；精简
9. rebound	[,ri:'baund]	n.	回弹；篮板球
		vi.	回升；弹回
		vt.	使弹回
10. bounce	[bauns]	n.	跳；弹力；活力
		vt.	弹跳；使弹起
		vi.	弹跳；弹起，反跳；弹回
11. sway	[swei]	vt.	影响；统治；使摇动
		vi.	影响；摇摆
		n.	影响；摇摆；统治
12. effect	[i'fekt]	n.	影响；效果；作用
		vt.	产生；达到目的
13. reduce	[ri'dju:s]	vt.	减少；降低；使处于；把.....分解
		vi.	减少；缩小；归纳为
14. absorb	[əb'sɔ:b, -'zɔ:b]	vt.	吸收；吸引；承受；理解；使.....全神贯注
15. rear	[riə]	vt.	培养；树立；栽种
		vi.	暴跳；高耸
		adv.	向后；在后面
		adj.	后部的；后面的；背面的
		n.	[军]后方；后卫部队
16. construct	[kən'strʌkt]	vt.	建造，构造；创立
		n.	构想，概念
17. variety	[və'raɪəti]	n.	多样；种类
18. rate	[reit]	n.	比率，率；速度；价格；等级
19. capacity	[kə'pæsəti]	n.	能力；容量；资格，地位；生产力
20. coil	[kɔil]	vt.	盘绕，把.....卷成圈
		n.	线圈；卷

		vi.	成圈状
21. torsion	['tɔ:ʃ(ə)n]	n.	扭转, 扭曲; 转矩; [力]扭力
22. combination	[,kɒmbɪ'neɪʃən]	n.	结合; 组合; 联合; 化合
23. mount	[maʊnt]	vt.	增加; 爬上; 使骑上马
		vi.	爬; 上升
		n.	山峰; 底座; 乘骑用马
24. technique	[tek'ni:k]	n.	技巧, 技术; 手法
25. suspension	[sə'spenʃən]	n.	悬浮; 暂停; 停职

Notes:

1. in contact with: 与.....保持联系

So we have been, as I said, in contact with them constantly.

如我所言, 我们一直与他们都在保持着经常性的联系。

“There are too many people I want to keep in contact with.” says Kate.

凯特说: “我想和太多的人保持联系。”

2. Provide: vt. 提供; 规定; 准备; 装备 vi. 规定; 抚养; 作准备
provide for 供给; 准备; 约定; 提供

They provided him with a car and driver.

他们为他提供了一辆汽车和一位司机。

3. Under normal conditions: 在正常状态下

Tests results show that under normal condition the influence of weather on journey is evident.

试验结果表明在正常情况下, 天气对旅行的影响很明显。

4. bounce: n. 跳; 弹力; 活力 vt. 弹跳; 使弹起 vi. 弹跳; 弹起, 反跳; 弹回

My father would burst into the kitchen bouncing a tennis ball.

我父亲会拍打着网球闯进厨房。

Your arms and legs need protection from light bouncing off glass.

需要保护你的手臂和双腿免受玻璃反射光线的照射。

The car was bouncing up and down as if someone were jumping on it.

车上下颠簸, 仿佛有人正在上面跳动。

5. refer to: 参考; 涉及; 指的是; 适用于

He never referred to his sisters in his letters.

他在信里从未提到过他的姊妹。

If you don't know the spelling of a word, you should refer to a dictionary.

如果你不会拼写一个词，你应当查一下词典。

All his classmates referred to him as "Blackbeard".

他的同学都称他为“黑胡子”。

6. a variety of: 种种；各种各样的.....

This can happen for a variety of reasons, and these reasons can be unintended as well as deliberate.

这一情况可能是由多种原因造成的，这些原因可能是无意的，也可能是故意的。

7. pair off: 成对而去；把.....分成对

The teacher paired off his students by age and height.

老师根据年龄和高矮将学生分成一对一对。

8. be attached to:

1) (变得) 喜欢，喜爱，爱慕，依恋，对.....有感情

2) 隶属于；附属于

Likewise, a policy set can be attached to a service reference, its endpoints, or operations.

类似地，也可以将策略集附加到服务引用、其端点或操作。

Task 1: Read, answer and retell. Read again and answer the following questions according to passage and then try to translate and retell the passage.

Comprehending questions:

1. What are the two functions of suspension system?

_____.

2. How does the spring do to make the passengers comfortable?

_____.

3. What causes the bouncing and swaying of a vehicle?

_____.

4. What kind of spring do you know?

_____.

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the given words.

Automobile suspension system has 1 basic functions. A lot of the system's

work is done by the 2 . Under normal conditions, the springs support the body of the car evenly by compressing and rebounding with every up-and-down movement. These uncomfortable effects are 3 by the shock absorbers.

Suspension, when discussing cars, refers to the use of the 4 and rear springs to suspend a vehicle's "sprung" 5 . The springs used on today's cars and trucks are constructed in a variety of types, shapes, sizes, rates and capacities. 6 include leaf springs, coil springs, air springs, and torsion bars. They may be paired off on vehicles in various 7 and are attached to vehicles by several different mounting 8 .

Task 3: Translate the following sentences into Chinese.

1. Automobile suspension system has two basic functions, to keep car's wheels in firm contact with the road and to provide comfortable ride form the passengers.

_____。

_____。

2.This up-and-down movement, however, causes bouncing and swaying after each bump and is very uncomfortable to the passenger.

_____。

_____。

3. They may be paired off on vehicles in various combinations and are attached to vehicles by several different mounting techniques.

_____。

_____。

4. Suspension, when discussing cars, refers to the use of the front and rear springs to suspend a vehicle's "sprung" weight.

_____。

_____。

Reading Materials B: Layout of a modern automobile

The automobile body is the assembly of sheet-metal, fiberglass, plastic, or composite-material panels together with windows, doors, seats, trim and upholstery, glass, and other parts that form enclosures for the passenger, engine, and luggage compartments. The assembled body structure may attach through rubber mounts to a separate or full frame (body-on-frame construction), or the body and frame may be integrated (unitized-body

construction).

In the latter method, the frame, body parts, and floor pan are welded together to form a single unit that has energy-absorbing front and rear structures, and anchors for the engine, suspension, steering, and power-train components. A third type of body construction is the space frame which is made of welded steel stampings. Similar to the tube chassis and roll cage combination used in race-car construction, non-load-carrying plastic outer panels fasten to the space frame to form the body.

The frame is the main structural member to which all other mechanical chassis parts and the body are assembled to make a complete vehicle. In older vehicle designs, the frame is a separate rigid structure; newer passenger-car designs have the frame and body structure combined into an integral unit, or unitized body.

Subframes and their assembled components attach to the side rails at the front and rear of the unitized body. The front subframe carries the engine, transmission or transaxle, lower front suspension, and other mechanical parts. The rear subframe, if used, carries the rear suspension and rear axle.

New Words:

1. assembly	[ə'sembli]	n.	装配；集会，集合
2. fiberglass	['faibəglɑ:s]	n.	玻璃纤维；玻璃丝
3. upholstery	[ʌp'həulstəri]	n.	家具装饰用品业；垫衬物
4. enclosure	[in'kləuzə]	n.	附件；围墙；围场
5. compartment	[kəm'pɑ:tmənt]	n.	隔间；区划；卧车上的小客房
		vt.	分隔；划分
6. integrate	['intigreit, 'intigrit, -greit]	vt.	使.....完整 ;使.....成整体 ;求..... 的积分；表示.....的总和
		vi.	求积分；取消隔离；成为一体
		adj.	整合的；完全的
		n.	一体化；集成体
7. weld	[weld]	vt.	焊接；使结合；使成整体
		vi.	焊牢
		n.	焊接；焊接点
8. anchor	['æŋkə]	n.	锚；抛锚；靠山；新闻节目主播
		vt.	抛锚；使固定；主持节目

- | | | | |
|-------------------|--------------------------------|------|----------------|
| 9. assemble | [ə'sembl] | vi. | 抛锚 |
| | | adj. | 末棒的；最后一棒的 |
| 10. integral unit | | vt. | 集合，聚集；装配；收集 |
| 11. transaxle | ['træn'sæksəl, trænz-, tra:n-] | vi. | 集合，聚集 |
| | | | 成套机组；联合机组；全套部件 |
| | | n. | 变速驱动桥；变速差速器 |

Lesson 4: Automobile Technical Data (汽车技术数据)

Section one: What are the technical data of an automobile?

Task 1: Read and match. Read the names of an automobile technical data according to the chinese meaning and sort out the names of the same group.

	主要参数 Specifications	
	尺寸及质量	
长×宽×高 (mm)	4380 × 1705 × 1490	
轴距 (mm)	2600	
最小离地间隙 (mm)	170	
整备质量(kg)	1170	1190
动力及性能		
发动机型号	BYD473QD	BYD483QA
变速器	五前速手动变速器	智能CVT无级变速器
排气量(L)	1.5	1.8
最大功率(kW/rpm)	80 / 5800	90 / 6000
最大扭矩 (Nm /rpm)	144 / 4800	160 / (3700 ~ 4200)
底盘性能		
制动系统	四轮盘刹	
悬挂系统 (前/后)	麦弗逊式独立悬架 / 拖曳臂式扭力杆悬架	
轮胎尺寸	195 / 60 R15	

- | | |
|---------------------------------|---------------------------------|
| 1. 轮距 Wheel track | 2. 最小离地间隙 Min. ground clearance |
| 3. 转弯直径 Turning Diameter | 4. 车轮外倾角 Wheel camber |
| 5. 最大装载量 Max. loading capacity | 6. 燃料消耗量 Fuel consumption |
| 7. 环保性 Environmental protection | 8. 加速时间 Acceleration time |
| 9. 前悬 Front overhang | 10. 最高车速 Max. speed |
| 11. 轴距 Wheelbase | |

Main external size _____。

The mobility _____。

Steering technical data _____。

Mass parameter _____。

Performance indexes _____。

Task 2: Read the following passage and answer the questions according to the meaning of the text.

1. What is the external size of a car?

_____。

2. Which part does the departure angle belong to?

_____。

3. What is the mass parameter?

_____。

4. How many technical data of an automobile do you know?

_____。

Section two: What are the car technical data?

When we talk about the technical data of an automobile, we mainly include the following parts: firstly the external size of car, such as vehicle length, width, height, wheelbase, wheel track, front overhang, rear overhang; secondly the mobility of a car as approach angle, departure angle, min. ground clearance, turning diameter; thirdly the steering technical data as wheel toe, wheel camber, biggest corner; fourthly the mass parameter as max. load mass, authorized max. total mass, Factory set the max. loading capacity, authorized the max. loading capacity; lastly the basic performance indexes of the car are Power performance, Braking performance, Operation stability, Environmental protection, Reliability, and Durability.

Dialogue A

Adam : Hey there Chris, what are you up to?

Chris : I'm just poring over some brochures about various car models.

Adam : Oh, so you're thinking about buying a new car?

Chris : Yeah, it looks that way. My wife has been bugging me about it. I thought we could probably survive without one, but with a baby on the way, maybe it is time to get a car.

Adam : So this would be your first automobile?

Chris : That's right. For quite a few years, I rode a bicycle to work. Then I got a motorbike.

Adam: So it's time to buy your very first car! Wow, that's exciting!

Chris : Yes, but the technical data of an automobile is also important. I didn't know much about them. And I'm having a hard time deciding which model is best for us.

Adam : Yeah, it is a tough decision. Each one has its pros and cons. Are you looking for a sedan?

Chris : Yes, I'd like to take your advice into account.

Task 1: Read the dialogue and answer the following comprehending questions.

1. Why Chris looking at some brochures about car models?

_____.

2. Who has made up his mind to buy a car?

_____.

3. How did he use to go to work?

_____.

4. What is the meaning of "Each one has its pros and cons."

_____.

Task 2: Read and understand the following meaning of each technical data.

Engine type 1

AJR type, electronic fuel injection

Displacement 2

1.78 L

Max. output 3

74kW(5,200r/min)

Max. torque 4

155N·m(3.800r/min)

Transmission 5

5-speed manual gearbox, fully synchronized

Fuel consumption 6

6.8L/100km at 90km/h

Wheelbase 7

2,656mm

Dialogue B

The following dialogue is about the technical data of BMW 520d 2009. Read and try to fill in the missing information with the given words, and practice them with your partner.

better	max. torque	more acceleration	shift gears	max. power
--------	-------------	-------------------	-------------	------------

Mrs Brown: How To Read Engine Specifications seems a basic question, but till now I am not very much clear what to make out of engine specifications like Power (PS@rpm) 76@4000 and Torque (Nm@rpm) 197@1750.

Betty: This means that 1 of 76PS is attained at 4000 RPM. The same is for torque too. More torque available at lesser RPM helps in 2 drive ability.

Mrs Brown: Wait, I can't follow you. What do you mean by saying "more torque available at lesser RPM helps in better drive ability?"

Betty: This means you don't have to constantly downshift in traffics for the car to pull because you have the 3 (the twisting force) available at 1750 RPM itself.

Mrs Brown: So it means Torque at low RPM is more useful for city driving and more Power will be good for Highway driving? Am I right to understand this?

Betty: Yes you are. More torque at low RPM is great for city, which means lesser gear shifting, and 4 at the lights. More power necessarily helps for top speed stints on highways. But overtaking needs torque on demand.

Mrs Brown: Can I understand as this? 76 Ps @ 4000 RPM means all the horses (power) of my vehicle is at 4000 RPM. And the Power will drop if I 5 above 4000 RPM.

Betty: Quite right. So next time you go for a race, make sure you shift your gears right at 4000 RPM.

Mrs Brown: Thank you very much.

Reading Materials A: A car without insurance

You can drive a car without insurance, but if you get in an accident, the consequences can be serious. Anyway, if you had insurance at one time and you let your policy expire, the insurance company by law has to notify the division of licensing that you no longer have insurance and that if you do not show that you have new insurance, you can have your license suspended.

Regardless of who is at fault for the accident, most states require you report the accident to the Department of Motor Vehicle with in 10 days of the accident. The accident report collects from the Department of Motor Vehicle will include information regarding your insurance. If you don't have insurance, you won't have anything to add to this section. You can expect a fine from the DMV, and possible revocation of your tags. Some states will revoke the tags for 30 days or more, even if you end up insuring the vehicle

with in that time frame.

In most states it is unlawful to operate any motor vehicle without carrying some form of insurance that satisfies the minimum financial responsibility requirements for your particular state. Most states also have severe penalties for people who drive without insurance with the 2 most common penalties being a 1-year license suspension and impoundment of your vehicle, in which you have to pay a hefty fine to get it out. Also, if you were to have an accident with no insurance, not only could you be penalized as described above but you could be sued heavily and be financially screwed for a long, long time.

New Words:

1. insurance	[in'ʃuərəns]	n.	保险 ; 保险费 ; 保险契约 ; 赔偿金
2. accident	['æksidənt]	n.	事故 ; 意外 ; 意外事件 ; 机遇
3. consequence	['kɒnsɪkwəns]	n.	结果 ; 重要性 ; 推论
4. serious	['siəriəs]	adj.	严肃的 , 严重的 ; 认真的 ; 庄重的 ; 危急的
5. policy	['pɒlɪsi]	n.	政策 , 方针 ; 保险单
6. expire	[ik'spaɪə, ek-]	vi.	期满 ; 终止 ; 死亡 ; 呼气
		vt.	呼出 (空气)
7. notify	['nəʊtɪfaɪ]	vt.	通告 , 通知 ; 公布
8. division	[di'vɪʒən]	n.	除法 ; 部门 ; 分割 ; 师 (军队) ; [体] 赛区
9. license	['laɪsəns]	n.	执照 , 许可证 ; 特许
		vt.	许可 ; 特许 ; 发许可证给
10. suspend	[sə'spend]	vt.	延缓 , 推迟 ; 使暂停 ; 使悬浮
		vi.	悬浮 ; [体] 禁赛
11. regardless	[rɪ'gɑːdlɪs]	adj.	不管 ; 不顾 ; 不注意
12. fault	[fɔːlt]	n.	故障 ; 错误 ; 缺点 ; 毛病
		vi.	弄错
		vt.	(通常用于疑问句或否定句) 挑剔
13. require	[rɪ'kwaɪə]	vt.	需要 ; 要求 ; 命令
14. report	[rɪ'pɔːt]	n.	报告 ; 报道 ; 成绩单
		vt.	报告 ; 报导 ; 使报到

		vi.	报告；报到；写报导
15. department	[di'pɑ:tmənt]	n.	部；部门；系；科；局
16. include	[in'klud]	vt.	包含，包括
17. section	['sekʃən]	n.	截面；部门；地区；章节
		vi.	被切割成片；被分成部分
		vt.	把.....分段；将.....切片；对.....进行划分
18. expect	[ik'spekt]	vt.	期望；指望；[口]认为；预料
		vi.	期待；预期
19. revocation	[,revə'keiʃən]	n.	取消；撤回；废除
20. revoke	[ri'vəuk]	vt.	撤回，取消；废除
		vi.	有牌不跟
21. frame	[freim]	n.	框架；结构；画面
		vt.	设计；建造；陷害；使.....适合
		vi.	有成功希望
		adj.	有木架的；有构架的
22. operate	['ɒpəreit]	vi.	运转；动手术；起作用
		vt.	操作；经营；引起；对.....开刀
23. satisfy	['sætisfai]	vi.	令人满意；令人满足
		vt.	满足；说服，使相信；使满意，使高兴
24. minimum	['miniməm]	n.	最小值；最低限度；最小化；最小量
		adj.	最小的；最低的
25. financial	[fai'nænfəl]	adj.	金融的；财政的，财务的
26. responsibility	[ri,sponsə'biliti]	n.	责任，职责；义务
27. requirement	[ri'kwaiəmənt]	n.	要求；必要条件；必需品
28. particular	[pə'tikjulə]	adj.	特别的；详细的；独有的；挑剔的
		n.	详细说明；个别项目
29. severe	[si'viə]	adj.	严峻的；严厉的；剧烈的；苛刻的
30. penalty	['penəlti]	n.	罚款，罚金；处罚
31. impoundment	[im'paundmənt]	n.	蓄水；扣留
32. hefty	['hefti]	adj.	重的；肌肉发达的；异常大的
		adv.	强有力地；非常

		n.	体格健壮的人
33. describe	[di'skraib]	vt.	描述，形容；描绘
34. sue	[sju:, su:]	vt.	控告；请求
		vi.	控告；提出请求
35. screw	[skru:]	vt.	旋，拧；压榨；强迫
		n.	螺旋；螺丝钉；吝啬鬼
		vi.	转动，拧

Notes:

1. insurance: 保险，保险费，保险契约，赔偿金

She canvassed for insurance during her spare time.

她在业余时间里兜揽保险业务。

My house was insured with a local insurance company.

我的房子是向当地一家保险公司保的险。

I balanced the benefits against the costs of medical insurance.

我权衡了医疗保险的好处和它的花费。

Then: Do I have life insurance?

接着他问：我有人身保险吗？

2. get in:

1) 到达，进入

When he applied, he knew no one who could advise him on how to get in.

当年他申请的时候，他不认识任何一个可以告诉他如何进入哈佛的人。

2) 陷入，收获

I'm worried that my favorite language will get in trouble in the not so distant future.

我担心我最爱的语言在不是很远的将来陷入困境。

If you want to get in shape, no pain, no gain, remember?

如果你要有健美的身材，就要一分耕耘一分收获，记得吗？

3. at one time:

1) 一度，同时

They had based on Greenland at one time.

他们曾一度在格陵兰岛上建立基地。

2) 曾经

Most of us, at one time or another, have been struck with the thought that we might

mistake a dream for reality, or reality for a dream.

我们中的大多数都曾经有过这么一种想法：我们可能将一个梦境误认为是现实，或者将现实误认为是梦境。

4. notify: 通知，通告，公布

Please notify us when you leave.

当你要离开时，请通知我们。

Actually I meant to notify you beforehand.

实际上我是想事先通知你的。

词根：notify

n. notice 通知，布告；注意；公告

notification 通知；通告；[法] 告示

vi. notice 引起注意

vt. notice 通知；注意到；留心

5. fine: 罚款，优良的，精美的，很好的，晴朗的，好的，健康的

1) 罚款

The traffic policeman censured the driver but didn't fine him.

交通警察严厉地批评了这位汽车司机，但对他没有进行罚款。

This fine has nothing to do with the detention incident.

此次罚款与拘留事件毫无关联。

2) 晴朗的

Then one fine day, you will smile to yourself.

然后在一个晴朗天，你将会对自己微笑。

6. satisfy the...requirements

These values are lower than the design limit and satisfy the design requirements.

其计算结果均小于设计限值，符合设计要求。

7. penalty: 罚金，处罚，罚款

He saved us from the penalty of sin.

他救我们脱离了罪的刑罚。

Some of the players claims a penalty but the referee told them to play on.

有些队员认为应当判罚，但裁判让他们继续比赛。

Half of those surveyed say that the penalty should be as severe as that for drunk driving.

被调查的人中有一半认为应像对待醉酒驾车一样进行严厉惩罚。

If not, well, I accept the physical penalty without complaint.

就当是毫无怨言地在承受这个肉体上的惩罚。

8. sue: 请求, 控告

I can sue you for slander.

我可以告你诬陷。

She dared me to sue her.

她问我敢不敢去控告她。

I don't think it's necessary for you to sue him for such a matter.

我认为就这点小事, 没必要对他提起诉讼。

9. screw: 螺旋, 压榨, 螺丝钉, 旋, 拧, 强迫, 转动

Once you know someone well, the last thing you want to do is screw them.

一旦你了解了一个人, 你最不想做的就是压榨强迫他们。

Forcing a cool material to flow can generate excessive shear energy and localized degradation in the screw's flow channel.

强迫一种冷材料流动会产生极大的剪切能, 并在螺杆的流道中产生降解。

Task1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Anyone can drive a car without insurance if he or she can get himself out of an accident. ()
2. You have your license suspended if you let your policy expire. ()
3. It is lawful to operate any motor vehicle without carrying some form of insurance. ()
4. If you were to have an accident with no insurance, you would be penalized and be sued heavily. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information from the passage and then try to retell the passage.

When you get in an accident without insurance, the consequences can be 1. Anyway, if your policy expires, the insurance company has to notify 2 that you no longer have insurance and that if you do not show that you have new insurance, you can have your license 3.

Regardless of who is at fault for the accident, most states require you report the

__4__ to the Department of Motor Vehicle with in __5__ days of the accident. The accident report collects from the Department of Motor Vehicle will include information regarding your __6__. If you don't have insurance, you won't have anything to add to this section. You can expect a __7__ from the DMV, and possible revocation of your tags. In most states it is __8__ to operate any motor vehicle without carrying some form of insurance that satisfy the minimum financial responsibility requirements for your particular state. Most states also have severe __9__ for people who drive without insurance with the 2 most common penalties being a 1-year license suspension and impoundment of your vehicle, in which you have to pay a hefty fine to get it out. Also, if you were to have an accident with no insurance, not only could you be penalized as described above but you could be sued heavily and be __10__ screwed for a long, long time.

Task 3: Translate the following sentences into Chinese.

1. Anyway, if you had insurance at one time and you let your policy expire, the insurance company by law has to notify the division of licensing that you no longer have insurance and that if you do not show that you have new insurance, you can have your license suspended.

2 . Regardless of who is at fault for the accident, most states require you report the accident to the Department of Motor Vehicle with in 10 days of the accident.

3. Most states also have severe penalties for people who drive without insurance with the 2 most common penalties being a 1-year license suspension and impoundment of your vehicle, in which you have to pay a hefty fine to get it out.

Reading materials B: The side slip tester

The side slip tester is a steel plate that can roll sideways on bearings. When the operator drives a wheel of a car over the plate, the tire may move the plate sideways. These forces arise among others, when the toe setting of an axle is out of specification. The side slip tester measures the distance in meters over which a wheel of an axle is dragged sideways, when the other wheel of that axle runs straight for one kilometer.

The main influencing factor of the measurement is the total toe adjustment of the axle. The alignment is set to have all wheels run straight forward at cruising speed. The wheels should also run parallel to the car centre line. The side slip reading will correspond to a toe adjustment between the dynamic toe value and the static toe value. The operator must always drive over the side slip tester at walking speed. He should avoid that the car body moves up and down, as this causes bump steer. When the side slip tester measures more than 7 m/km effective toe-in or toe-out, the operator must check the wheel alignment. When the measurement is between 4 and 7 m/km effective toe-in or toe-out, the operator is advised to check the wheel alignment.

New Words:

1. bearings	['beərɪŋz]	n.	轴承 (bearing 的复数形式)
2. drag	[dræg]	vt.	拖累; 拖拉; 缓慢而吃力地行进
		vi.	拖曳; 缓慢而吃力地行进
3. adjustment	[ə'dʒʌstmənt]	n.	调整, 调节; 调节器
4. alignment	[ə'lainmənt]	n.	队列, 成直线; 校准; 结盟
5. cruise	[kru:z]	vi.	巡航, 巡游; 漫游
		vt.	巡航, 巡游; 漫游
		n.	巡航, 巡游; 乘船游览

Lesson 5: Import Vehicle Labels (进口车标签)

Section one: Labels of vehicle model

Task 1: Talking and Practicing. Look at the following pictures and talk about the VIN.

1. What does VIN mean?

2. How many numbers does a VIN include?

3. What kinds of information can you read from VIN?

4. Why do we need to know knowledge about VIN?



Task 2: Some manufacturers producing imported cars use three combination codes in VIN to indicate a specific brand. Read and name the following brands.

TRU/WAU: 1

1YV/JM1: 2

4US/WBA/WBS: 3

WDB: 4

2HM/KMH: 5

VF3: 6

SAJ: 7

WP0: 8

SAL: 9

YK1/YS3: 10

YV1: 11

Section two: English Labels of Imported Automobiles

Dialogue A:

How big is this parking lot in our community?

A: How big is this parking lot in our community?

B: It has fifty parking spaces.

A: So you guys should be always busy.

B: Why?

A: I bet it is always full of cars.

B: Quite the contrary, sir. Plenty of the spaces here are free when people drive their cars out to work.

A: Ah...I see.

B: We plan to rent some of them out at the hourly rates.

A: What is the hourly rate for a car like this?

B: I am not sure. But it'll be at least ten yuan an hour.

A: How much would it cost if someone parks here for one hour and ten minutes?

B: That would be twenty yuan, sir. We charge only by the number of hours, no split of each hour.

A: That's expensive.

Task 1: Answer the following comprehending questions.

1. How do you know whether a parking lot is big or not?

_____.

2. Why are many spaces in the parking lot always free?

_____.

3. Do you think the charge for the cars are reasonable?

_____.

4. Do you have parking lot in your community? How does it charge for cars ?

_____.

Dialogue B

Task 2: The following dialogue is about the meaning of Vehicle Identification Numbers (VIN). Read and try to fill in the missing information with the given words, and practice them with your partner.

letters	numbers	manufacturer	functions	information parameters
---------	---------	--------------	-----------	------------------------

Jane: Excuse me, I have got to a new car. But I don't know the meanings and 1 of the VIN code. I heard you had a good knowledge of them, can you spare a few minutes to tell me something about them?

Enrigue: It's my pleasure. You know, most cars produced by car companies around the world are now using the VIN. Vehicle identification code is composed of a set of 2 and Arabic numerals, a total of 17, also known as 17 identification code numbers.

Jane: That's what puzzled me. What exactly does each number represent?

Enrigue: Actually, each code represents one of the car 3 respectively. If you know how to read it, your car's Vehicle Information Number will tell you more than you

ever wanted to know about your ride.

Jane: What secrets do those 17 letters and numbers hold?

Enrique: If you know how to read these 4 you can identify the vehicle easily, such as producing country, the 5 , the type of car series, brand name, model, body type, engine type, model year, safety protection device model...

Jane: Oh, my God! Wait! I am more confused about these numbers. It seems takes a couple of days for me to understand VIN. I'd better take some notes on what you said. Can you explain it again?

Enrique: Here is a book about the car. You can read and study it later. Now let's do something really practical. I will teach you how to start the car.

Task 3: Read passage about the VIN of a Benz and tell the meanings of WDB 220 167 1A326964.

WDB: _____

220: _____

1: _____

67: _____

1: _____

A: _____

326964: _____

Reading materials A: The meaning of a Benz's VIN

WDB 220 167 1A326964

“WDB” stands for produce country

The commonly known produce countries:

- WDB—West Germany Daimler-Benz
- WDC—M-Class Europe
- WEB—EVOBUS Mercedes-Benz
- WKK—EVOBUS Setra
- 3AM—Mexico
- 4JG—M-Class except Europe
- 8AB—Argentina
- 8AC—Argentina

- 9BM—Brazil
- ADB—South Africa
- KPA—South Korea Transporter
- KPD—South Korea
- KPG—South Korea
- NMB—Turkey
- VAG—G-Wagon Steyr
- VF9—EVOBUS France
- VSA—Spain
- LE4—China

WDB 220 167 1A326964

“220” stands for S-Class

常见级别所代表车型

底盘号内部分组 100—299 轿车 ;300—399 卡车/公共汽车 ;400—499 专用车 ;
600—699 卡车 ; 700—799 主要部件

WDB 220 167 1A326964

- 0—Sedan
- 1—LWB Sedan
- 2—Station Wagon
- 3—Coupe
- 4—Cabriolet/roadster
- 5—Chassis with partial body
- 6—LWB Chassis with partial body
- 7—Sports
- 8—Pull man

WDB 220 167 1A326964

- 00 ~ 09 四缸柴油发动机 04—E220
- 10 ~ 19 五缸柴油发动机 10—E250
- 20 ~ 29 六缸柴油发动机 20—E300
- 30 ~ 49 四缸汽油发动机 35—E200
- 50 ~ 69 六缸汽油发动机 55—E320 63—S320 67—S350
- 70~79 八到十二缸汽油发动机 75—S600
- 80 ~ 84 AWD 替代能源发动机

- 85 ~ 99 Alternative propulsion 替代能源动力

WDB 220 167 1A326964

- 1—左舵

- 2—右舵

WDB 220 167 1A326964

- A,B,C,D,E—Sindelfingen(新德芬根)

- F,G,H—Bremen(布莱门)

- J—Rastatt

WDB 220 167 1A326964

- 326964 装配出厂顺序号

Reading Materials B: VIN and its history

VIN (Vehicle Identification Number), named Vehicle Identification Code in Chinese, is a set of codes to identify and specify a car by car factory. SAE standards are as follows: VIN code consists of 17 characters, so commonly known as 17 codes. It contains information including the vehicle's manufacturer, times, model, type and code, engine and car body assembly location etcetera. Understanding VIN codes correctly is very important for us to identify models, diagnose and maintain. With permutation and combination, Vehicle identification codes can make the same model car without duplicate phenomenon within 30 years. Because the code has the only identification, it is referred to as a "Car ID".

The history of VIN can be traced back to 1949. But before 1981 the standard has been in transformation. For example, from 1965 to 1969 VIN has nine numbers. The number increased by 10 after the production exceeds more than 1 million from 1970 to 1980. From then on VIN is fixed at 10. The current 17 auto identification numbers began in 1981. Our country has already issued related standards at the end of 1996, and has come into force in 1997.

The three English letters will not contained in VIN are I, O and Q.

Counted from left to right, the tenth code is used for the time of vehicle factory.

New Words:

- | | | | |
|-------------------|--------------------|----|------------------|
| 1. identification | [aɪ,dentɪfɪ'keɪʃn] | n. | 鉴定, 识别; 认同; 身份证明 |
|-------------------|--------------------|----|------------------|

2. code	[kəʊd]	n.	代码, 密码; 编码; 法典
		vt.	编码; 制成法典
3. identify	[ai'dentɪfaɪ]	vt.	确定; 识别; 把.....看成一样
		vi.	确定; 认同; 一致
4. specify	['spesəfaɪ, -si-]	vt.	指定; 详细说明; 列举;
5. standard	['stændəd]	n.	标准; 水准; 度量衡标准
		adj.	标准的; 合规格的
6. consist	[kən'sɪst]	vi.	组成; 在于; 符合
7. character	['kærəktə]	n.	性格, 品质; 特性; 角色; 字符
8. commonly	['kɒmənli]	adv.	一般地; 通常地; 普通地
9. contain	[kən'teɪn]	vt.	包含; 控制; 容纳; 牵制 (敌军)
		vi.	含有; 自制
10. manufacturer	[,mænju'fæktʃərə(r)]	n.	制造商; 厂商
11. model	['mɒdəl]	n.	模型; 典型; 模范; 模特; 样式
		vi.	做模型; 做模特
		adj.	模范的; 作模型用的
12. engine	['endʒɪn]	n.	引擎, 发动机; 机车, 火车头; 工具
13. assembly	[ə'sembli]	n.	装配; 集会, 集合
14. location	[ləu'keɪʃən]	n.	位置 (形容词 locational); 地点
15. etcetera	[et'setərə]	n.	等等; 附加物; 附加的人; 以及其他
16. correctly	[kə'rektli]	adv.	正确地; 得体地
17. diagnose	['daɪəgnəʊz, daɪəg'nəʊz]	vt.	诊断; 断定
		vi.	诊断; 判断
18. maintain	[meɪn'teɪn]	vt.	维持; 继续; 维修; 主张; 供养
19. permutation	[,pɜ:mju'teɪʃn]	n.	排列; 置换

20. combination	[,kɒmbɪ'neɪʃn]	n.	结合；组合；联合；化合
21. duplicate	['dju:plikət, 'dju:plikeit]	vt.	复制；使加倍
		n.	副本；复制品
		adj.	复制的；二重的
22. phenomenon	[fi'nɒminən, fə-]	n.	现象；奇迹
23. refer	[ri'fə:]	vi.	参考；涉及；提到；查阅
		vt.	涉及；委托；归诸于； 使.....求助于
24. trace	[treɪs]	vi.	追溯；沿路走
		vt.	追踪，查探；描绘；回溯
		n.	痕迹，踪迹；迹线；缰绳
25. transformation	[,trænsfə'meɪʃən]	n.	转化；转换；改革；变形
26. increase	[in'kri:s, 'ɪnkri:s]	n.	增加，增长；提高
		vi.	增加，增大；繁殖
		vt.	增加，加大
27. exceed	[ik'si:d]	vt.	超过；胜过
		vi.	超过其他
28. current	['kʌrənt]	adj.	现在的；流通的，通用的； 最近的
		n.	(水，气，电)流；趋势； 涌流
29. issue	['ɪʃju:, 'ɪsju:]	n.	问题；流出；期号；发行物
		vt.	发行，发布；发给；放出， 排出
		vi.	发行；流出；造成.....结果； 传下
30. related	[ri'leɪtɪd]	adj.	有关系的，有关联的；讲 述的，叙述的
		v.	叙述 (relate 过去式)
31. count	[kaunt]	vt.	计算；认为
		vi.	计数；有价值
		n.	计数；计算；伯爵

Notes:

1. a set of: 一套, 一副, 一组

He has turned a set of chair legs.

他已经车出了一副椅子腿。

Governance should not be a set of static processes without any flexibility.

治理不应该是一组没有任何灵活性的静态过程。

2. as follows: 如下

Define it as follows (as one line). 定义如下 (一行)。

The statement reads in full as follows ... ; 声明全文如下...

Write the RC codes as follows in Listing 4.

编写如下面清单 4 所示的 RC 代码。

3. consist of: 由.....构成

They always consist of a single, in-lined region.

它们始终由单一的、内联的区域组成。

Business operations consist of steps or tasks that are performed in a sequence.

业务操作是由按顺序执行的步骤和任务组成的。

4. contain: 包含, 控制, 牵制, 容纳, 自制, 含有

1) 包含

But what if none of them contain the component that you need?

但是如果它们都不包含您所需要的组件该怎么办呢?

The following few rules contain the secret of correct book-keeping.

以下几条规定包含了正确记账的秘诀。

2) 容纳

Your heart is designed to contain God.

你的心注定是来容纳上帝的。

Each card then could contain different data in the text or picture fields, as in a database.

然后每张卡片可以在它的文本字段、图片字段里面容纳各种数据, 就像数据库一样。

5. refer to: 参考, 适用于, 指的是, 涉及

1) 参考

Study the example and refer to the explanation below.

研究这个例子并参考下面的解释。

Finally, make some general notes about your mood that day, so you can refer to it later.

最后，为了你可以日后参考它，对那天你的心情做一些一般性的总结。

2) 涉及

It did not refer to labor costs or discuss how many robots would be involved.

声明没有提到人工成本或者讨论这个计划涉及多少机器人。

Fictional retellings of the story refer to the mask as an “Iron” mask.

而流传下来的故事里涉及这副面具时都说是铁面。

6. issue: 问题，发给，期号，放出，排出，流出，发行物，发布，发行

1) 问题

The king adventured his crown upon the issue.

国王在此问题上拿他的王冠冒险。

2) 发行

Greece and Ireland have lost the confidence of markets, even though both issue bonds in euros.

希腊和爱尔兰尽管还用欧元发行债券，但是他们对市场的信心大大削弱。

3) 期号

The study appears in the June 2nd issue of the journal Cell Metabolism.

这项研究发表在 6 月 2 号期的《细胞新陈代谢》杂志上。

7. trace back to: 追溯到

Now, supposing we trace back to 8, 000 years ago, let us image visiting our hardy ancestors, who resided at Zhoukoudian.

现在假设追溯到 8000 年以前，我们去访问住在周口店的吃苦耐劳的祖先。

Part one trace back to history of the information war.

第一部分追溯信息战的历史。

8. come into force: 开始实施，生效

Every association must inform FIFA about the dates of the two registration periods at least 12 months before they come into force.

各协会须在注册期生效的 12 个月前将两个注册期的日期通知国际足联。

Even Mercedes and BMW make small cars that will help offset their gas-guzzlers when the new rules, based on fleet-average emissions, come into force.

甚至奔驰和宝马也开始生产小型车，期望当基于产品线平均排放量的新条律生

效时，将有助于抵消他们的油老虎的排放量。

Task 1: Answer the following questions according to the dialogue.

1. What is VIN?

_____.

2. What do the 17 code numbers include?

_____.

3. How many years can vehicle identification codes make the same model car without duplicate phenomenon?

_____.

4. How many letters are not included in the VIN?

_____.

5. In which year did the current 17 auto identification numbers begin?

_____.

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information from the passage and then try to retell the passage.

VIN (Vehicle Identification Number), named 1 in Chinese, is a set of 2 to identify and specify a car by car factory. SAE standards are as follows: VIN code consists of 3 characters, so commonly known as 17 codes. It contains information including the vehicle's 4, times, model, 5, engine and car body assembly location etcetera. Understanding VIN codes correctly is very important for us to identify models, 6 and maintain. With permutation and combination, Vehicle identification codes can make the same model car without duplicate phenomenon within 30 years. Because the code has the only 7 it is referred to as a "8".

The history of VIN can be traced back to 1949. But before 1981 the standard has been in transformation. For example, from 1965 to 1969 VIN has nine numbers. The 9 increased by 10 after the production exceeds more than 1 million from 1970 to 1980. From then on VIN is fixed at 10. The current 17 10 began in 1981. Our country has already issued related standards at the end of 1996, and has come into force in 1997.

The three English letters will not be contained in VIN are I, O and Q. Counted from left to right, the tenth code is used for the time of vehicle factory.

Task 3: Translate the following sentences into Chinese.

1. VIN (Vehicle Identification Number), named Vehicle Identification Code in Chinese, is a set of codes to identify and specify a car by car factory.

2. Understanding VIN codes correctly is very important for us to identify models, diagnose and maintain.

3. Because the code has the only identification, it is referred to as a “Car ID”.

4. The history of VIN can be traced back to 1949. But before 1981 the standard has been in transformation.

5. Counted from left to right, the tenth code is used for the time of vehicle factory.

Chapter 2

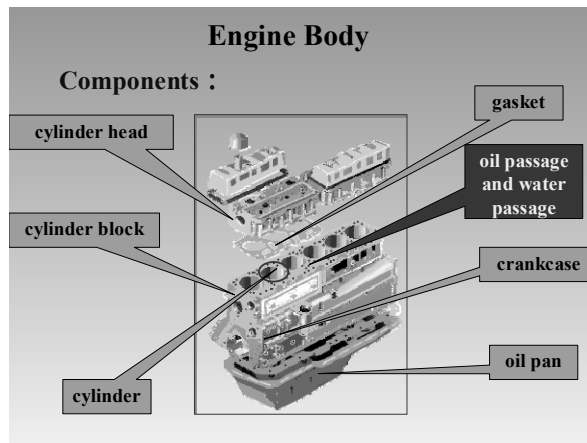
Automobile Engine (汽车发动机)

Lesson 6: The General Structure of an Engine (汽车发动机的一般结构)

Section one: Structure of an engine

Task 1: Talking and Practicing

Look at the picture and match the correct Chinese meanings with the components of an engine.



- | | |
|-------------------|---------|
| 1. cylinder block | A. 汽缸体 |
| 2. cylinder head | B. 曲柄箱 |
| 3. oil pan | C. 曲轴连杆 |
| 4. piston | D. 汽缸盖 |
| 5. ring gear | E. 活塞 |
| 6. gasket | F. 齿圈 |
| 7. crankcase | G. 油盘 |

8. connecting rod

H. 衬垫

9. valve spring

I. 气门弹簧

Task 2: Read and answer questions. You will read a passage about the systems of an engine. Choose the correct answers according to the reading materials.

The actions taking place in the engine cylinder can be divided into four stages, or strokes.

Stroke refers to piston movement. A stroke occurs when the piston moves from one limiting position to the other. The upper limit of piston movement is called TDC (top dead center). The lower limit of piston movement is called BDC (bottom dead center). A stroke is piston movement from TDC to BDC or from BDC to TDC. In other words, the piston completes a stroke each time it changes its direction of motion.

Where the entire cycle of events in the cylinder requires four strokes (or two crankshaft revolutions), the engine is called a four-stroke-cycle engine, or a four-cycle engine. The four piston strokes are intake, compression, power, and exhaust.

1. What do we see from the paragraphs? ()

A. What is stroke?

B. What is engine?

C. What is cylinder?

2. What is BDC in the term of automobile industry? ()

A. Top dead center.

B. Bottom dead center.

C. Neither of A and B.

3. Which one Statement is TRUE according to the last paragraph? ()

A. The four strokes occur in two crankshaft revolutions.

B. The four strokes occur in four crankshaft revolutions.

C. The four strokes occur in one crankshaft revolutions.

Section two: How does the engine work?

Dialogue A: A Car without engine

Bill: What do you think of a car without an engine?

Susan: A car without an engine? It is too strange? Why did you choose such a car?

Bill: I didn't buy any car. It is a long story. Some years ago my girlfriend and I visited a city. In the hotel there was a guide who asked us if we wanted to experience something strange. We accepted and he drove us down a slope maybe 15 degree. When we came to the bottom he stopped the car, switched off the engine and put the gear in free. After 5 seconds, the car started to move upwards about 15 m!

Susan: Amazing! How did it work?

Bill: He said it was due to earth magnetism. What's your opinion?

Susan: I have no idea at all.

Task 1: Reading and comprehending questions.

1. Susan is strange about what Bill said, isn't she ?

_____.

2. Why did the Bill and his girlfriend accept the suggestion to experience something strange?

_____.

3. Where did they go?

_____.

4. When they switched off the engine and put the gear in free, what happened?

_____.

5. What is the explanation of the guide?

_____.

Dialogue B:

Read the dialogue, fill in the missing information with the given words, and practice them with your partner.

intake	air-fuel	four-stroke	piston	power	exhaust	gasoline
--------	----------	-------------	--------	-------	---------	----------

A: What is used in the automobile today?

B: The 1 and diesel engine. The gasoline engine is the most popular in the automobile.

A: Can you introduce the gasoline engine?

B: Yes. The gasoline engine is a 2 spark-ignition engine. It can be either liquid-cooled or air-cooled.

A: Great. The automobile engine is usually a four-stroke engine. Can you talk about the operating cycle of four-stroke?

B: Okay. A four-stroke engine includes 3 , compression, 4 and exhaust strokes. For a gasoline engine, the intake stroke brings the fresh air and fuel. The compression stroke compresses the 5 mixture. When mixture is ignited by spark plugs,

the expansion takes place. The expanding gases push down on the top of the 6, the power stroke occurs. As the piston comes up again 7 gases are pushed out of the engine, the exhaust stroke happens.

A: Thank you.

Task 1: Speaking and practicing. Read the following expressions and use them to make a dialogue.

In my opinion...

I think the reason why ...is that...

What do you think of...?

What's your opinion?

Why do you choose...?

Perhaps...is more important.

I would rather choose...

Maybe it is better to choose...

Reading Material A: Engine and power

The engine which is called the “heart” of a vehicle is used to supply power for an automobile. It includes the fuel, lubricating, cooling, ignition and starting systems. Generally, an automobile is operated by internal combustion engine. The internal combustion engine burns fuel within the cylinders and converts the expanding force of the combustion or “explosion” into rotary force used to propel the vehicle.

The engine is a self-contained power unit which converts the heat energy of fuel into mechanical energy for moving the vehicle. Because fuel is burned within the engine, it is known as an internal combustion engine. In the internal combustion engine, air/fuel mixture is introduced into a closed cylinder where it is compressed and then ignited. The burning of the fuel causes a rapid rise in cylinder pressure which is converted to useful mechanical energy by the piston and crankshaft. The most common engine is the four-stroke piston engine. These four strokes are intake, compression stroke, power stroke and exhaust stroke.

In a reciprocating engine, the power mechanism is called the crankshaft and connecting rod assembly. In this assembly, all of the major units such as the engine crankcase and cylinder block, the piston and connecting rod, the crankshaft and flywheel work

together to convert thermal energy into mechanical energy used to drive the vehicle.

The piston converts the potential engines of the fuel into the kinetic energy that turns the crankshaft. The piston is a cylindrical shaped hollow part that moves up and down inside the engines' cylinder.

The connecting rod is attached to the crankshaft at one end (big end) and to the piston at the other end (small end).

The crankshaft serves to change the reciprocating motion of the piston into rotary motion and handles the entire power output.

The flywheel is a relatively heavy metal wheel, which is firmly attached to the crankshaft. Its function is to help the engine to run smoothly by absorbing some of the energy during the power stroke and releasing it during the other strokes.

In conclusion, the connecting rod and crankshaft mechanism of the engine is composed of various units, and each of these units has its own functions in producing power for vehicles.

New Words:

1. supply	[sə'plai]	n.	供给, 补给; 供应品
		vt.	供给, 提供; 补充
		vi.	供给; 替代
2. fuel	['fjuəl]	vt.	供以燃料, 加燃料
		n.	燃料; 刺激因素
3. lubricate	['lubrikeit]	vi.	润滑; 涂油; 起润滑剂作用
		vt.	使.....润滑; 给.....加润滑油
4. ignition	[ɪg'niʃn]	n.	点火, 点燃; 着火, 燃烧; 点火开关, 点火装置
5. internal	[in'tə:nəl]	adj.	内部的; 内在的; 国内的
6. combustion	[kəm'bʌstʃən]	n.	燃烧, 氧化; 骚动
7. within	[wi'ðin]	prep.	在.....之内
		adv.	在内部
		n.	里面
8. cylinder	['silində]	n.	圆筒; 汽缸; 柱面; 圆柱状物
9. convert	[kən've:t]	vt.	使转变; 转换.....
		vi.	转变, 变换; 皈依; 改变信仰

10. expand	[ik'spænd]	vt.	扩张；使膨胀；详述
		vi.	发展；张开，展开
11. explosion	[ɪk'spləʊʒn]	n.	爆炸；爆发；激增
12. propel	[prəu'pel]	vt.	推进；驱使；激励；驱策
13. self-contained	[self kən'teɪnd]	adj.	独立的；设备齐全的
14. mechanical	[mi'kænikəl]	adj.	机械的；力学的；手工操作的
15. mixture	['mɪkstʃə(r)]	n.	混合；混合物；混合剂
16. compress	[kəm'pres]	vi.	受压缩小
		vt.	压缩，压紧；精简
17. ignite	[ɪg'nait]	vt.	点燃；使燃烧；使激动
		vi.	点火；燃烧
18. rapid	['ræpid]	adj.	迅速的，急促的；飞快的；险峻的
19. pressure	['preʃə(r)]	n.	压力；压迫，压强
		vt.	迫使；使……增压
20. piston	['pɪstən]	n.	活塞
21. crankshaft	['kræŋkʃɑ:ft]	n.	曲轴
22. four-stroke	[fɔ: strəuk]	adj.	四冲程的（内燃机）
23. intake	['inteɪk]	n.	摄取量；通风口；引入口；引入的量
24. exhaust	[ɪg'zɔ:st]	vt.	排出；耗尽；使精疲力尽；
		vi.	排气
		n.	排气；废气；排气装置
25. reciprocate	[ri'sɪprəkeɪt]	vt.	报答；互换；互给
		vi.	往复运动；互换；酬答；互给
26. assembly	[ə'sembli]	n.	装配；集会，集合
27. flywheel	['flaɪwi:l]	n.	飞轮，惯性轮；调速轮
28. thermal	['θə:məl]	adj.	热的，热量的
		n.	上升暖气流
29. kinetic	[ki'netɪk, kai-]	adj.	运动的；活跃的
30. hollow	['hɒləʊ]	adj.	空的；中空的，空腹的；凹的；
31. serve	[sə:v]	vt.	招待，供应；为……服务；对……有用；可作……用
32. rotary	['rəʊtəri]	adj.	旋转的，转动的；轮流的

33. handle	['hændl]	n.	把手；柄
		vt.	处理；操作；运用；买卖；触摸
		vi.	搬运；易于操纵
34. entire	[in'taiə]	adj.	全部的，整个的；全体的
35. relatively	['relativli]	adv.	相当地；相对地，比较地
36. firmly	['fə:mli]	adv.	坚定地，坚决地；坚固地，稳固地
37. smooth	[smu:ð]	adj.	顺利的；光滑的；平稳的
38. release	[ri'li:s]	vt.	释放；发射；让与
		n.	释放；发布；让与
39. conclusion	[kən'klu:ʒn]	n.	结论；结局；推论
40. compose	[kəm'pəuz]	vt.	构成；写作
		vi.	组成；作曲
41. various	['veəriəs]	adj.	各种各样的；多方面的

Notes:

1. be used to sth.\ doing sth.: 习惯于

Even though you should be used to it by now, it's still stressful, but there's hope yet!

尽管现在你该习惯了空闲期，但它仍然会给你带来很大压力，好在，解除这种压力还是有希望！

be used to do 被用来做

Eventually, this environment can be used to do more than just observe a system.

最终，可以使用该环境来做的工作不仅仅是观察某个系统。

2. convert: 使转变，变换，皈依，转换.....，转变，改变信仰，皈依者

1) Why does it convert?

为什么它要转换？

2) In order to convert hearers into listeners, you need to know why they should listen to you —— and tell them if necessary.

为了把听众转换成倾听者，您需要了解他们为什么需要听您的演讲——如果必要您可以告诉他们。

3) The signal will be converted into digital code.

信号将被转变成数字编码。

3. propel: 推进，驱使，激励

And scientists believe that making stone tools helped propel that evolution.

而科学家认为，制造石器帮助推进这种进化。

4. in conclusion: 最后，总之

In conclusion, I wish this meeting every success.

最后，预祝本届年会取得圆满成功！

5. The engine which is called the “heart” of a vehicle is used to supply power for an automobile.

被称做汽车心脏的发动机是被用来为汽车提供能量的。

6. The engine is a self-contained power unit which converts the heat energy of fuel into mechanical energy for moving the vehicle.

发动机自己带有把热度转化为动能从而让汽车运动的能量单元。

1) 定语从句

在复合句中，修饰某一名词或代词，用做定语的从句叫做定语从句(attributive clause)。被定语从句所修饰的词叫做先行词(antecedent)。定语从句必须放在先行词之后。引导定语从句的关联词有关系代词 who、whom、whose、which、that 和关系副词 when、where、why 等。

2) which 的用法

which 指物，在定语从句中作主语和宾语，作宾语时，在限制性定语从句中可省略。

Today, fruit trees which once grew only in China can now be found in many parts of the world.

今天，那些曾经只在中国生长的果树能够在世界上许多地方看到了。(作主语，不能省略)

They needed a plant which didn't need as much water as rice.

他们需要一种不像水稻那样需要水的作物。(作主语，不能省略)

It is used to record the tickets (which) passengers buy.

它用来记录乘客所购买的车票。(作宾语，可以省略)

He came late, which we all know.

我们都知道，他来晚了。(作宾语，在非限制性定语从句中不省略)

7. up and down

1) 一来一往地，来回地

2) 上上下下；起起伏伏；时好时坏

3) 各处；到处

4) [美国口语] 直截了当地，坦率地

5) 彻底地；完全地；详细地同近义词上上下下；到处；前前后后；来来往往

He looked me up and down.

他开始上下打量我。

What you do is squat up and down really fast.

你所要做的就是真正快速地上下蹲坐。

8. up hill and down dale 翻山越岭；形容长途跋涉

9. up street and down street 在街上走来走去

1) united at up-and-down mine 井上下联合

2) up and down converters 上变频器和下变频器

3) bob up and down 在水面上忽沉忽浮

4) pace up and down 徘徊；走来走去；徘徊不前；停留

5) bounce up and down 蹿上跳下；上下弹跳

6) chain up and down 锚链垂直；环比涨跌

7) up and down baffle 上下回流式隔板

8) run smoothly 顺利运作

Perhaps everything will run smoothly.

也许一切将运转顺利。

The separation of power as well as this system of checks and balances is what makes our country run smoothly.

权力的分离以及这个制约和平衡系统一同使我们的国家的顺利运行。

9) run vi. 经营；奔跑；运转 vt. 管理，经营；运行；参赛 n. 奔跑；赛跑；趋向；奔跑的路程

[过去式 ran 过去分词 run 现在分词 running]

He helped his father run a shop in Shanghai.

他协助父亲在上海经营一家商店。

Career managers run the company for you —— in theory.

职业经理替你经营这个公司——理论上是这样。

Task 1: True or False questions.

1. The engine calls a vehicle the “heart” and is used to supply power for an automobile.

2. It is generally known that an automobile is operated by internal combustion engine.

3. In a internal combustion engine, the power mechanism is called the crankshaft and connecting rod assembly.

4. The piston is attached to the crankshaft at one end (big end) and to the piston at the other end (small end).

5. The flywheel's function is to help the engine to run smoothly.

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information from the passage and then try to retell the passage.

The engine is used to supply 1 for an automobile. It includes the fuel, lubricating, cooling, ignition and starting systems. Generally, an automobile is operated by 2 engine , which burns fuel and converts the expanding force to propel the vehicle.

The engine is a self-contained power unit which 3 the heat energy of fuel 4, 5, 6 mechanical energy for moving the vehicle. Because fuel is burned within the engine, it is known as an internal combustion engine. In the internal combustion engine, air/fuel mixture is introduced into a closed 7 where it is compressed and then ignited. The most common engine is four-stroke engine. These are intake, compression stroke, power stroke and exhaust stroke.

In a reciprocating engine, the power mechanism is called the 8 assembly. In this assembly, all of the major units such as the engine crankcase and cylinder block, the piston and connecting rod, the crankshaft and flywheel work together to convert thermal energy into mechanical energy used to drive the vehicle.

The 9 converts the potential engines of the fuel into the kinetic energy that turns the crankshaft. The piston is a cylindrical shaped hollow part that moves up and down inside the engines cylinder.

The 10 is attached to the crankshaft at one end (big end) and to the piston at the other end (small end).

Task 3: Translate the following sentences into Chinese.

1. The engine which is called the “heart” of a vehicle is used to supply power for an automobile.

_____。

2. Because fuel is burned within the engine, it is known as an internal combustion engine.

_____。

3. The most common engine is the four-stroke piston engine. These four strokes are intake, compression stroke, power stroke and exhaust stroke.

4. In conclusion, the connecting rod and crankshaft mechanism of the engine is composed of various units, and each of these units has its own functions in producing power for vehicles.

Reading materials B: Engine cooling system

The purpose of the cooling system is to keep the engine at its most efficient operating temperature at all speeds under all driving conditions. As fuel is burned in the engine, about one-third of the heat energy in the fuel is converted into power. Another third goes out through the exhaust pipe unused, and the remaining third must be handled by the cooling system. This means that the engine can work effectively only when the heat energy is equally handled so as to keep the engine temperature in balance.

So, the temperature is quite essential for an engine to produce power. No engine can work well without suitable operating temperatures. If the engine runs too hot, it may suffer from pre-ignition, while the air-fuel charge is ignited prematurely from excessive combustion chamber temperature. Viscosity of the oil circulating in an over heating engine is reduced. Hot oil also forms varnish and carbon deposits may be drawn into the combustion chamber where it increases HC emission. This also causes poor performance and premature wear, and may even result in engine damage. What's more, the behavior of the metals at excessively high temperature also differs from that at normal temperatures. If the engine runs too cold, the fuel will not vaporize properly. If liquid fuel reaches the cylinders, it will reduce lubrication by washing the oil from the cylinder walls and diluting the engine oil. This causes a loss of performance, an increase in HC emissions, and premature engine wear. For these reasons, a cooling system of some kind is necessary in any internal combustion engine.

There are generally two different types of cooling system: water-cooling system and air-cooling system. Water-cooling system is common. The cooling medium, or coolant,

in them is either water or some low-freezing liquid, called antifreeze. A water-cooling system consists of the engine water jacket, thermostat, water pump, radiator, radiator cap, fan, fan drive belt and necessary hoses.

New Words:

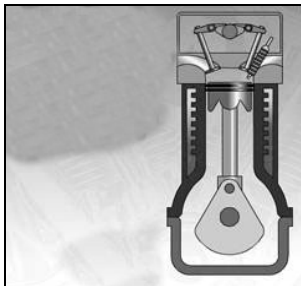
1. efficient	[ɪ'fɪʃənt]	adj.	有效率的 ; (直接) 生效的 ; 能干的 ; 收效大的
2. exhaust	[ɪg'zɔ:st]	vt.	用尽 , 耗尽 ; 使精疲力尽 ; 排出 ; 彻底探讨
		vi.	排气
3. essential	[ɪ'senʃəl]	adj.	基本的 ; 必要的 ; 本质的 ; 精华的
		n.	本质 ; 要素 ; 必需品
4. premature	[,premə'tjuə, pri:-]	adj.	早产的 ; 不成熟的 ; 比预期早的
		n.	早产儿 ; 过早发生
5. viscosity	[vi'skɔsəti]	n.	黏性 , 黏度
6. lubrication	[,lu:bri'keɪʃən]	n.	润滑 ; 润滑作用

Lesson 7: Working principles of the four-stroke-engine (四冲程发动机的工作原理)

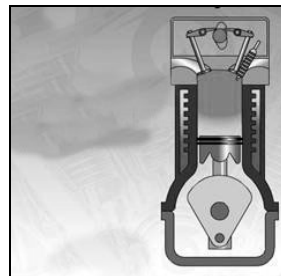
Section one: Four-stroke engine

Task 1: Talk and Practice

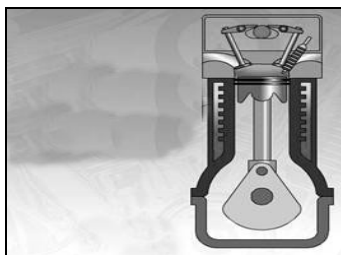
Look at the following four pictures and read the four statements. Choose the statement that best describes what you see in each picture.



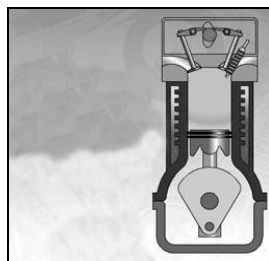
(1) ____



(2) ____



(3) ____



(4) ____

A. Exhaust stroke: The exhaust valve is opened and the piston travels back up expelling the exhaust gases through the exhaust valve. At the top of this stroke the exhaust valve is closed.

B. Compression stroke: The intake valves are closed and the piston travels up compressing the air/fuel mixture.

C. Combustion stroke: The piston is now forced down by the pressure wave of the combustion of the air/fuel mixture. The engine's power is derived from this stroke.

D. Intake stroke: The intake valves open and a mixture of gas and air is drawn into the engine.

Task 2: Read and match. Read the words of engine operation and make a match. Try to point out some more special facilities for the engine working in English.

A. exhaust gas	() 1. 空气燃油混合物
B. mixture of gas and air	() 2. 排气门
C. gasoline engine	() 3. 汽油机
D. combustible mixture	() 4. 可燃混合气
E. intake valve	() 5. 活塞
F. exhaust valve	() 6. 废气
G. intake valve	() 7. 进气门
H. diesel engine	() 8. 柴油机
I. piston	() 9. 冲程
J. stroke	() 10. 进气门

Section two: What controls the length of the stroke?

Dialogue A

(Customer B is talking with a mechanic A about the trouble of his car.)

A: What's the matter with your car?

B: My car turned off suddenly during my driving. I don't know the reason. It is pretty terrible.

A: Let us have a check.

B: All right. Thank you.

(20 minutes later)

A: We have checked out the problem. The engine oil shortage caused the adhesion between the piston and cylinder, which make it impossible for the engine to operate normally.

B: What controls the stroke of the engine operation?

A: The crank connecting rod works. Probably you don't understand, but I can tell you that the engine damaged seriously. It should take several days to repair.

B: Oh, my god. Then I have to wait. Thank you.

A: You are welcome.

Comprehending questions:

1. What is the relationship between the two persons?

_____.

2. What's wrong with the engine?

_____.

3. Is it easy or difficult to repair the engine? Why?

_____.

Dialogue B

Read and practice. Read the dialogue, fill in the missing information, and practice them with your partner.

back and forth	operation	intake	compression	combustion	exhaust
----------------	-----------	--------	-------------	------------	---------

Tom: Hi, John, can you explain the 1 principle of engine for me?

John: It is easy to speak, while the working process is more complicated, you must be patient enough to learn that.

Tom: All right, I will try my best.

John: First the engine is to make the piston move 2 , which is divided into four processes.

Tom: Can you explain the 3 respectively.

John: Okay, the four processes include 4 stroke, 5 stroke, 6 stroke and 7 stroke.

John: Oh. It is so complicated.

Tom: right. But it will help during your job with a better understanding for the four strokes.

John: Well. I think so. I'll try to learn it well.

Task3: Practice

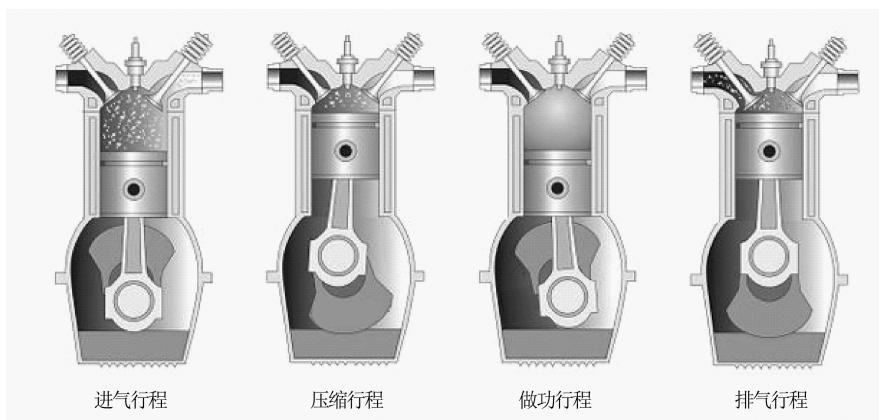
Practice dialogues according to the situations provided with your partner.

1. Jim and Ben are in the workshop, discussing troubles of engine. Jim doesn't understand because he needs to know the working principle of engine. Ben is explaining that for him.

2. Mary is a staff member of car maintenance store, she is explaining in detail the structure and operation principle of engine for car owner.

Reading materials A: Four-stroke engine operation

A four-stroke engine, also known as four-cycle, is an internal combustion engine in which the piston completes four separate strokes: intake, compression, power and exhaust. The main parts in four-stroke engine include intake valve, spark plug, exhaust valve, combustion chamber and piston head.



The four strokes refer to intake, compression, combustion (power) and exhaust strokes. A stroke refers to the full travel of the piston from Top Dead Centre (TDC) to Bottom Dead Centre (BDC).

1. INTAKE stroke: on the intake or induction stroke of the piston, the piston de-

scends from the top of the cylinder to the bottom of the cylinder, increasing the volume of the cylinder. A mixture of fuel and air, or just air in a diesel engine, is forced by atmospheric pressure into the cylinder. The intake valve then closes.

2. COMPRESSION stroke: with both intake and exhaust valves closed, the piston returns to the top of the cylinder compressing the air or fuel-air mixture into the combustion chamber. During the compression stroke the temperature of the air or fuel-air mixture rises by several hundred degrees.

3. POWER stroke: while the piston is close to Top Dead Centre, the compressed air-fuel mixture in a gasoline engine is ignited, usually by a spark plug. The resulting pressure from the combustion of the compressed fuel-air mixture forces the piston back down toward bottom dead centre.

4. EXHAUST stroke: during the exhaust stroke, the piston once again returns to top dead centre while the exhaust valve is open.

New words:

1. valve	[vælv]	n.	阀门
2. separate	['sepəreɪt]	adj.	分离的
		vi.	分离
3. chamber	['tʃeɪmbə(r)]	n.	燃烧室
4. descend	[dɪ'send]	vi.	向下倾斜, 下降
5. mixture	['mɪkstʃə(r)]	n.	混合, 混合物
6. atmospheric	[,ætməs'ferɪk]	adj.	大气的

Notes:

1. A four-stroke engine, also known as four-cycle, is an internal combustion engine in which the piston completes four separate strokes: intake, compression, power and exhaust.

四冲程发动机也被称做四个汽缸的发动机, 是通过活塞完成四个独立的冲程的内燃机, 包括进气、压缩、做功(燃烧)、排气。

2. also known as 也被称做

3. in which 引导定语从句修饰 internal combustion engine.

4. TDC=top dead center 上止点, 活塞离曲轴中心线最大距离时的位置。

5. BDC=bottom dead center 下止点, 活塞离曲轴中心线最小距离时的位置。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. All the engines are four-stroke engines. ()
2. The four stroke means the piston will rotate four circles. ()
3. The combustion stroke is also called power stroke. ()
4. Diesel engine is different with the gasoline engine during the working process. ()
5. The distance between the TDC and BDC is called one stroke. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

A four-stroke engine, also known as 1, is an 2 in which the piston completes four separate strokes: 3. The main parts in four-stroke engine include intake valve, 4, exhaust valve, 5 and 6.

The four strokes refer to intake, compression, combustion (power) and exhaust strokes. A stroke refers to the 7 of the 8 from 9 to 10.

Reading materials B: Four-stroke engine noise

The present invention provides a four-stroke internal combustion engine having reduced noise emissions. The engine includes a filter element having substantially flat inlet and outlet sides, a first housing portion, and a second housing portion coupled to the first housing portion. The first and second housing portions define an air chamber in which the filter element is supported. The second housing portion includes an interior surface, at least one protrusion to space the inlet side of the filter element from the interior surface, and an air passageway. The outlet of the air passageway is positioned adjacent the interior surface to deliver air to the air chamber between the interior surface and the inlet side of the filter element. A ratio of the volume of the air chamber to the length of the air passageway is between about 5 inch and about 20 inch.

New Words:

- | | | | |
|----------------|-----------------|------|-----|
| 1. adhesion | [æd'hi:ʒən] | n. | 黏合 |
| 2. adjacent | [ə'dʒeisənt] | adj. | 邻近的 |
| 3. complicated | ['kɒmplikeitid] | adj. | 复杂的 |

4. cylinder	['silində]	n.	汽缸
5. descend	[di'send]	vi.	下降
6. element	['elimənt]	n.	成分
7. emission	[i'miʃən]	n.	排放
8. invention	[in'venʃən]	n.	发明
9. mixture	['mikstʃə]	n.	混合物
10. operation	['ɒpə'reiʃən]	n.	运行
11. passageway	['pæsɪdʒ'weɪ]	n.	通道
12. piston	['pistən]	n.	活塞
13. portion	['pɔ:ʃən]	n.	部分
14. process	['prəuses]	n.	过程
15. protrusion	[prə'tru:ʒn]	n.	突出
16. ratio	['reiʃiəu]	n.	比率
17. seriously	['sɪərɪəsli]	adv.	严重的
18. shortage	['ʃɔ:tidʒ]	n.	缺少
19. substantially	[səb'stænʃəlɪ]	adv.	相当地
20. temperature	['tempərɪtʃə]	n.	温度
21. volume	['vɒlju:m]	n.	容积
22. atmospheric pressure			气压
23. back and forth			来回地
24. Bottom Dead Centre			下止点
25. combustible mixture			可燃混合气
26. combustion chamber			燃烧室
27. combustion stroke			燃烧冲程
28. compression stroke			压缩冲程
29. crank connecting rod			曲柄连杆机制
30. diesel engine			柴油机
31. engine oil			机油
32. exhaust gas			废气
33. exhaust stroke			排气冲程
34. exhaust valve			排气阀
35. four-stroke engine			四冲程发动机
36. gasoline engine			汽油机

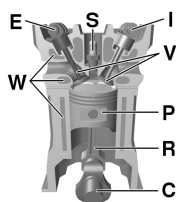
- | | |
|--------------------------------|------|
| 37. intake valve | 进气阀 |
| 38. intake stroke | 进气冲程 |
| 39. internal combustion engine | 内燃机 |
| 40. spark plug | 火花塞 |
| 41. turn off | 熄火 |
| 42. Top Dead Centre | 上止点 |
| 43. working principle | 工作原理 |

Lesson 8: Crank Connecting Rod Mechanism (曲柄连杆机构)

Section one: What is the crank connecting rod mechanism?

Task 1: Discuss and Practice

Look at the picture. For each part there is a corresponding name and abbreviation letter. Choose the abbreviation letter that describes what you see in the picture.



This picture shows clearly for components of a typical, four-stroke cycle, DOHC piston engine. () exhaust camshaft, () intake camshaft, () spark plug, () valves, () piston, () connecting rod, () crankshaft, () water jacket for coolant flow.

Task 2: Read and match. Read the devices of crank connecting rod mechanism and make a match. Try to point out more special facilities for crank connecting rod mechanism in English.

A. camshaft	() 1. 曲轴
B. cylinder block	() 2. 飞轮
C. piston pin	() 3. 齿轮传动
D. oil pan	() 4. 凸轮轴
E. crankshaft	() 5. 活塞销
F. main bearing	() 6. 正时齿轮

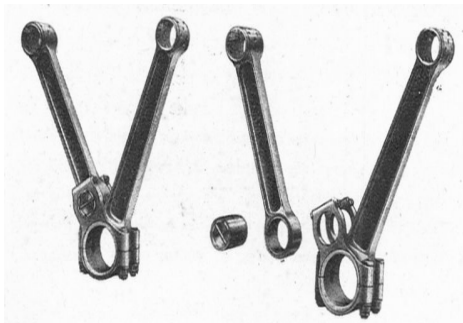
续表

G. timing gear	() 7. 汽缸体
H. flywheel	() 8. 主轴承
I. flywheel	() 9. 油底壳
J. gear drive	() 10. 飞轮

Section two: The Functions of the crank connecting rod mechanism

Dialogue A

(A and B are discussing functions of crank connecting rod mechanism.)



Connecting rod



Crankshaft (red) pistons (gray) in their cylinders (blue)
and flywheel (black)

B: What is the crank connecting rod mechanism?

A: From the word itself, it includes two parts, crankshafts and connecting rods. But when they combine together to work, that will be a mechanism which will perform a great function.

B: That sounds pretty interesting. Would you please explain more in detailed?

A: All right. As we all know that the piston moves in a straight line back and forth between top and bottom in the cylinder. Obviously it is not easy to perform function outward to a car. So let's think about what has changed the way for the engine to perform the function? It is the crank connecting rod mechanism.

B: Wow, it sounds magic. Such a small part performs so big function, which is full of deep meaning.

Comprehending questions:

1. What constitute the crank connecting rod mechanism?

2. What function does the crank connecting rod mechanism perform?

_____.

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

Intellective	get on	brain	You're welcome	divided into
--------------	--------	-------	----------------	--------------

Lucy: Hello, please 1 the car. Where will you go?

Tony: To the international airport, how long can we get there?

Lucy: About half an hour.

Tony: Hey, you car is pretty 2, with the signpost identifies system. Could you tell me how the signpost identifies system work?

Lucy: All right, the car's intelligence identifies system is 3 several parts, including spread sensor, electric circuit, computer and other effective equipments, they are equal to a person's 4.

Tony: You car is pretty advanced.

Lucy: Thanks. Here we are. It is 20 dollars.

Tony: Okay. Thank you.

Lucy: You're 5.

Task 3: Practice

Practice translating the following sentences into Chinese.

1. John is the sales adviser of a 4S store, he is just introducing toward the customer what is the crank connecting rod mechanism.

_____.

2. Susan is a manager of a 4S store, she is introducing toward the customer new style of the function of intelligence devices on a car.

_____.

Reading materials A: The Power mechanism of crank connecting rod

In a reciprocating piston engine, the connecting rod or con-rod connects the piston to the crank or crankshaft. Together with the crank, they form a simple mechanism that converts linear motion into rotating motion.

Connecting rods may also convert rotating motion into linear motion. Historically, before the development of engines, they were used in this way.

They are not rigidly fixed at either end, so that the angle between the connecting rod and the piston can change as the rod moves up and down and rotates around the crankshaft.

The small end attaches to the piston pin, gudgeon pin (the usual British term) or wrist pin, which is currently most often press fit into the con-rod but can swivel in the piston, a “floating wrist pin” design. The big end connects to the bearing journal on the crank throw, running on replaceable bearing shells accessible via the con rod bolts which hold the bearing “cap” onto the big end; Typically there is a pinhole bored through the bearing and the big end of the con rod so that pressurized lubricating motor oil squirts out onto the thrust side of the cylinder wall to lubricate the travel of the pistons and piston rings.

The con rod is under tremendous stress from the reciprocating load represented by the piston, actually stretching and relaxing with every rotation, and the load increases rapidly with increasing engine speed. Failure of a connecting rod, usually called “throwing a rod” is one of the most common causes of catastrophic engine failure in cars, frequently putting the broken rod through the side of the crankcase and thereby rendering the engine irreparable; It can result from fatigue near a physical defect in the rod, lubrication failure in a bearing due to faulty maintenance, or from failure of the rod bolts from a defect, improper tightening, or re-use of already used (stressed) bolts where not recommended. Despite their frequent occurrence on televised competitive automobile events, such failures are quite rare on production cars during normal daily driving. This is because production auto parts have a much larger factor of safety, and often more systematic quality control.

New words:

- | | | | |
|------------------|------------------|----|-----|
| 1. reciprocating | [rɪ'sɪprəkeɪtɪŋ] | a. | 往复的 |
| 2. gudgeon | ['ɡʌdʒən] | n. | 枢轴 |

3. swivel	['swɪvl]	n. & v.	转环，旋转
4. accessible	[ək'sesəbl]	a.	易接近的；可理解的；可卸的
5. pressurized	['preʃəraɪzd]	a.	增压的
6. squirts	[skwɜ:ts]	v.	喷射
7. catastrophic	[kætə'strɒfɪk]	a.	灾难性的，毁灭性的
8. crankcase	['kræŋkkeɪs]	n.	曲轴箱
9. occurrence	[ə'kʌrəns]	n.	发生
10. irreparable	[ɪ'repərəbl]	a.	不可修复的
11. systematic	[sɪstə'mætɪk]	a.	系统的，规则的

Notes:

1. In a reciprocating piston engine, the connecting rod or con-rod connects the piston to the crank or crankshaft.

在活塞往复式发动机内，连杆连接着活塞和曲柄或曲轴。

reciprocate v. 往复运动 reciprocating 这里用分词做定语，修饰 piston engine.

2. Together with the crank, they form a simple mechanism that converts linear motion into rotating motion.

连杆和曲柄一起形成一个简单的机制将往复运动转变成旋转运动。

together with.....是一个短语，“与.....一起”，that 引导一个定语从句，修饰 mechanism。

3. They are not rigidly fixed at either end, so that the angle between the connecting rod and the piston can change as the rod moves up and down and rotates around the crankshaft.

它们不会严格地固定于一端，于是当连杆做上下运动和绕曲柄旋转时连杆与活塞之间的夹角就发生改变。

be fixed 用做被动语态，so that 引导结果状语从句，as 引导时间状语从句。

4. The big end connects to the bearing journal on the crank throw, running on replaceable bearing shells accessible via the con rod bolts which hold the bearing “cap” onto the big end.

Running on.....是一个分词作伴随状语，via 相当于 through，是“通过”的意思。Which 引导一个定语从句修饰 bolts。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. The connecting rod or con-rod connects the piston to the crank or crankshaft. ()
2. In automobiles, the connecting rod converts rotating motion into linear motion. ()
3. The connecting rods are rigidly fixed at either end. ()
4. The small end attaches to the piston pin. ()
5. Typically there is a pinhole bored through the bearing and the big end of the conrod. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage and then try to retell the passage.

The con rod is under tremendous 1 from the reciprocating load represented by the 2, actually stretching and relaxing with every rotation, and the load increases rapidly with increasing 3. Failure of a connecting rod, usually called “4” is one of the most common causes of catastrophic engine failure in cars, frequently putting the broken rod through the side of the 5 and thereby rendering the engine irreparable; it can result from 6 near a physical defect in the rod, 7 in a bearing due to 8, or from failure of the 9 from a defect, improper tightening, or 10 of already used bolts where not recommended. Despite their frequent occurrence on televised competitive automobile events, such failures are quite rare on production cars during normal daily driving. This is because production auto parts have a much larger factor of safety, and often more systematic quality control.

Reading material B: Clever cars can read road signs

The plaintive plea to the traffic cop is the same the world over: “Sorry officer, I didn’t know I was speeding.” But drivers may soon have to come up with a better excuse. A new electronic driver’s assistant will detect road signs and warn drivers not to ignore them.

The Australian invention is part of a global effort to make drivers more aware of road signs, especially those concerned with safety. Eventually, GPS-based systems could entirely replace road signs, but until then, ideas like the new driver assistance sys-

tem (DAS) developed at the National Information and Communications Technology Australia (NICTA) lab in Canberra may help.

DAS uses three cameras: one to scan the road ahead and a pair to monitor where the driver is looking. The road camera is mounted on the rear view mirror and a “gaze monitoring” pair are set on either side of the instrument panel on the dashboard.

Images from the cameras are fed to a computer system fitted behind the dash. Software on the PC detects road signs and works out where the driver is looking. The speedometer is also connected to the computer, so the system always knows how fast the car is traveling.

The software scans the video pictures and detects road signs by recognizing their symmetrical shapes: rectangles, diamonds, octagons or circles. Once a sign is detected, the image is compared to a list of signs stored in the computer’s memory. If it recognizes a stop sign, the computer checks if the car is slowing down.

The computer uses a commercial package called Face Lab to analyze images from the stereoscopic cameras and work out where the driver is looking. If the driver appears not to have seen a sign, and the car’s speed does not change, an alert is issued, says Nick Barnes, one of the developers at NICTA.

NICTA’s team will tell the International Conference on Intelligent Robotic Systems in Sendai, Japan, this week that in preliminary tests DAS performed “pretty well” even at high speeds. Full-scale road trials, due to begin soon, will test the system with many more types of road signs.

Former NICTA team member Gareth Loy, who is now at the Royal Institute of Technology in Stockholm, Sweden, says sign detection is a tough engineering problem. Previous approaches have tried sensing the color patterns in signs.

But varying lighting conditions make this difficult. NICTA’s “symmetry seeker” makes detection easier in a cluttered scene regardless of the lighting, he claims.

However, there is a danger that sign detection could become annoying, warns Andrew Howard, head of road safety for the UK’s Automobile Association, especially on routes where the driver is familiar with the signs. Barnes agrees but says the system will not alert the driver if they do not look at a sign, only if they ignore the limit.

He predicts that working systems will have overrides or variable sensitivity. “It would be possible to set the system to be a little more tolerant of driving slightly over the speed limit.” he says.

Meanwhile, projects aimed at replacing road signs with roadside radio beacons, or GPS-based information systems that alert drivers to road rules, continue. Though Barnes says this will take many years, some campaigners cannot wait to see the end of road signs.

The Campaign to Protect Rural England, for instance, is protesting about the increasing number of signs cluttering English villages. But Australia has a different problem. “We don’t have that many road signs, so we need all the help we can get in finding them.” Loy says.

New Words:

1. attach	[ə'tætʃ]	vi.	粘上、附上
2. brain	[breɪn]	n.	大脑
3. bolt	[bəʊlt]	n.	螺栓
4. camera	['kæməərə]	n.	摄像头
5. camshaft	['kæmʃɑ:ft]	n.	凸轮轴
6. catastrophic	['kætə'strɒfɪk]	adj.	惨重的
7. combine	[kəm'beɪn]	vi.	合并
8. convert	[kən've:t]	vi.	转换
9. coolant	['ku:lənt]	n.	冷却液
10. crankshaft	['kræŋkʃɑ:ft]	n.	曲轴
11. dash	[dæʃ]	vi.	冲
12. fatigue	[fə'ti:g]	n.	疲劳
13. flywheel	['flaɪwi:l]	n.	飞轮
14. gudgeon	['gʌdʒən]	n.	易骗的人
15. intellective	['ɪntɪ'lektɪv]	adj.	智能的
16. magic	['mædʒɪk]	adj.	神奇的
17. mechanism	['mekənɪzəm]	n.	机制
18. perform	[pə'fɔ:m]	vt.	执行
19. pinhole	['pɪn'həʊl]	n.	针孔
20. plaintive	['pleɪntɪv]	adj.	哭诉的
21. plea	[pli:]	n.	借口, 请求
22. reciprocating	[rɪ'sɪprə,keɪtɪŋ]	adj.	往复的
23. replaceable	[rɪ'pleɪsəbl]	adj.	可代替的

24. sensor	['sensə]	n.	传感器
25. signpost	['saɪn'pəʊst]	n.	指示牌
26. speedometer	[spi'dɒmɪtə]	n.	速度计, 示速器
27. squirt	[skwɜ:t]	vi.	喷射
28. stretch	[stretʃ]	vi.	延伸
29. swivel	['swɪvəl]	vi.	旋转
30. tremendous	[tri'mendəs]	adj.	巨大的
31. connecting rod			连杆
32. cylinder block			汽缸体
33. divide into			分为
34. assistance system			辅助驾驶系统
35. gear drive			齿轮传动
36. linear motion			线性运动
37. main bearing			主轴承
38. oil pan			油底盘
39. piston pin			活塞销
40. rotating motion			旋转运动
41. timing gear			正时齿轮

Lesson 9: Clutch and Transmission (变速器和离合器)

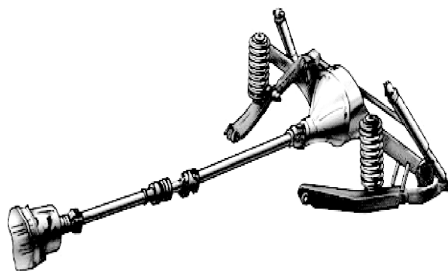
Section one: Main components of clutch and transmission

Task 1: Read and Practice

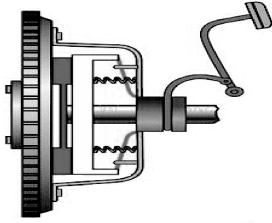
Look at the following four pictures and read the four statements. Choose the statement that best describes what you see in each picture.



Picture 1



Picture 2



Picture 3



Picture 4

A: A clutch can sometimes experience such troubles as slipping or juddering when engaged, and spinning or dragging when disengaged. It's necessary therefore to regularly check the proper free play at the clutch pedal.

B: The gearbox is used to control and change the speed of the car.

C: The power train transmits power from the engine to the car wheels so the car moves. The main components of the power train include the clutch, the gearbox and the differential.

D: The chassis is an important part of the automobile. It supports the power train, the steering system, the braking system and suspension.

Task 2: Read and match. Read the devices of clutch and transmission and make a match. Try to point out some more special facilities about clutch and transmission in English.

A. clutch disc	() 1. 离合器轴
B. input shaft	() 2. 变速器箱
C. clutch shaft	() 3. 传动轴
D. output shaft	() 4. 离合器盘
E. gearbox assembly	() 5. 驱动桥
F. gearbox	() 6. 输出轴
G. clutch cover	() 7. 离合器壳
H. propeller shaft	() 8. 离合器盖
I. clutch housing	() 9. 变速器总成
J. driving axle	() 10. 输入轴

Section two: The functions of clutch and transmission

Dialogue A

A: Do you know what are the clutch and the transmission devices?

B: Yeah. They are very important components of a car.

A: I know that transmission is to convert mechanical power. But how can that be achieved?

B: Well. It is achieved by changing the high rotating and low torque power into low rotating and high torque power, which is more effective.

A: It's amazing. So what is a clutch?

B: A clutch is a mechanical device that provides power for the transmission from one component to another when engaged between the pressure plate and friction pad, but can be disengaged.

A: You mean the clutch is located between the engine and the transmission, as disengaging it is required to change gear. Am I right?

B: Exactly. But now most of the cars use Automatic Transmission (AT). It is much easier for drivers to control.

Comprehending questions:

1. What is a clutch system? And what is the function of a clutch for a car?

_____。

2. What is a transmission system? And what is the function of a transmission for a car?

_____。

3. What is the automatic transmission? What is the advantage to use automatic transmission?

_____。

Dialogue B

Read and practice. Read the dialogue, fill in the missing information, and practice them with your partner.

clutch plate	juddering	change gears	check	replaced
--------------	-----------	--------------	-------	----------

Jack: This is Jack speaking.

SA: ABC Auto Repair Company. This is David, SA of our store. What can I do for you?

SA: My car doesn't work well when I 1. Especially when I use the second gear, sometimes it is hard to change, or it could be 2.

SA: Probable something is wrong with the clutch. Don't worry. Please drive to our

store. And I will have a full 3 for you.

Jack: Okay, thank you. Is it Okay if I go to your store this afternoon?

SA: No problem. See you then.

(In the afternoon)

SA: Something is wrong with the 4.

Jack: Can you fix it?

SA: It should be 5.

Jack: Okay. Thank you very much.

Task 3: Practice

Practice dialogues according to the situations provided with your partner.

1. Jack and David are talking about the clutch problem of a car. And they are discussing how to fix it and when the car can be picked up.

2. Jack and David are talking about the transmission problem of a car. And they are discussing how to fix it and when the car can be picked up.

Reading materials A: Transmission service and maintenance

The service and maintenance for the transmission is mainly through checking the sound during operating gears, changing gears and checking the leakage. It is much more important to check the transmission in road test.

First of all, it is necessary to check all the heading gears and rear gear. If there is wearing of gears every time, there are some problems for the clutch hydraulic system or transmission.

Second, it is necessary to check whether it is easy to operate gears. If you find that there is noise of collision or it is hard to change gears, there are some problems for the gearbox. After you turn off the car, try to change the gears again. If it is normal to change gears, probably something is wrong with the locating pin. If it is still hard to change gears, probably something is wrong with the speed synchronizer. It should be repaired.

If there is the problem of jumping out of gear, probably it is because the wearing between the gear and gear sleeve. It should be disassembled by professional mechanic to check the meshing condition. Oil leak is also abnormal. It should be repaired immediately.

Making a noise when the gears are in mesh is probably because something is wrong with the gearbox body. Some gears are damaged can cause collision during mesh.

New words:

1. transmission	[træns'mɪʃn]	n.	变速器
2. collision	[kə'liʒn]	n.	碰撞, 冲突
3. synchronizer	['sɪŋkrənaɪzə]	n.	同步器
4. meshing	['meʃɪŋ]	n.	啮合; 衔接; 钩住; 相合; 接合; 网格化

Notes:

1. First of all, it is necessary to check all the heading gears and rear gears.

首先要检查所有前进挡以及倒车挡。

heading gear 前进挡 rear gear 倒车挡

It is adj. to do sth. “做某事很……”这是一个非常常见的专业英语表达句式。

本文中频繁出现该句式。

2. It should be disassembled by professional mechanic to check the meshing condition.

这需要由专业维修人员拆下变速器查看齿轮的啮合状况。

be disassembled 用做被动语态

很多词加一个前缀 dis, 表示意思相反。例如 agree——disagree, appear——disappear。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. The service and maintenance for the transmission is not necessary. ()

2. If you find that there is noise of collision or it is hard to change gears, there are some problems for the clutch. ()

3. If there is the problem of jumping out of gear, probably it is because the wearing between the gear and gear sleeve. ()

4. Oil leak is normal. It shouldn't be repaired immediately. ()

5. Making a noise when the gears are in mesh is probably because something is wrong with the gearbox body. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

The service and maintenance for the transmission is mainly through checking the sound during operating gears, changing gears and checking the leakage. It is much more important to check the transmission in road test.

First of all, it is necessary to check all the heading gears and rear gears. Second, it is necessary to check whether it is easy to operate gears. If you find that there is noise of collision or it is hard to change gears, there are some problems for the gearbox. After you turn off the car, try to change the gears again. If there is the problem of jumping out of gear, probably it is because the wearing between the gear and gear sleeve. Making a noise when the gears are in mesh is probably because something is wrong with the gearbox body.

Reading materials B: Jump Start

A jump start, also called a boost, is a method of starting an automobile or other vehicle powered by an internal combustion engine when the vehicle's battery has been discharged. A second battery (often in another vehicle) is temporarily connected to provide starting power to the disabled vehicle. Once the disabled vehicle's engine is running, its alternator or generator should recharge the dead battery, so the second battery can be disconnected.

Most motor vehicles use a battery that provides power to a starter motor for the engine. When the engine is running, electrical power from its alternator restores the charge to the battery in preparation for the next start. When a battery is discharged, as for example by headlights left on while the engine is off, the car's engine will not "turn over" when the ignition key is turned and the vehicle will not start.

New Words:

1. achieve	[ə'tʃi:v]	vt.	实现
2. chassis	['ʃæsi]	n.	底盘
3. clutch	[klʌtʃ]	n.	离合器
4. collision	[kə'liʒən]	n.	碰撞
5. device	[di'veis]	n.	设备
6. differential	[,dɪfə'renʃəl]	n.	差速器

7. disassemble	[,disə'sembl]	vt.	拆卸
8. discharge	[dis'tʃɑ:dʒ]	vi.	放电
9. drag	[dræg]	vt.	拖拽
10. effective	[i'fektiv]	adj.	有效的
11. engage	[in'geɪdʒ]	vi.	啮合, 接入
12. gearbox	['giəbɒks]	n.	变速箱
13. generator	['dʒenəreɪtə]	n.	发电机
14. hydraulic	[haɪ'drɔ:lɪk]	adj.	液压的
15. judder	['dʒʌdə]	vt.	颤抖
16. leakage	['li:kɪdʒ]	n.	泄漏
17. maintenance	['meɪntɪnəns]	n.	维护, 保养
18. mechanic	[mi'kænik]	n.	技工, 机修工
19. mesh	[meʃ]	vi.	啮合
20. recharge	[ri:'tʃɑ:dʒ]	vt.	充电
21. replace	[ri'pleɪs]	vt.	更换
22. spin	[spɪn]	vi.	使.....旋转
23. suspension	[sə'spenʃən]	n.	悬架
24. synchronizer	['sɪŋkrənaɪzə]	n.	同步器
25. temporarily	['tempərərɪli]	adv.	临时地
26. transmit	[trænz'mɪt]	vt.	传输
27. torque	[tɔ:k]	n.	扭矩
28. wear	[weə]	vi.	磨损
29. gear	[gɛə]	vi.	换挡
30. clutch cover			离合器盖
31. clutch disc			离合器盘
32. clutch housing			离合器壳
33. clutch pedal			离合器踏板
34. clutch shaft			离合器轴
35. driving axle			驱动桥
36. free play			自由行程
37. friction pad			摩擦片
38. ignition key			点火开关
39. jump start			跨接启动

40. oil leak	漏油
41. output shaft	输出轴
42. power train	传动系
43. pressure plate	压力盘
44. professional	专业的
45. propeller shaft	传动轴
46. road test	路测
47. steering system	转向系

Chapter 3

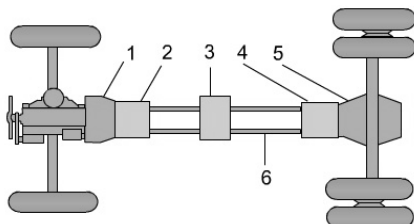
Automobile Chassis (汽车底盘)

Lesson 10: Driveline and Differential (传动系统和差速器)

Section one: Main components of driveline and differential

Task 1: Discuss and Practice

Look at the following picture. For each part there is a corresponding name and abbreviation letter. Choose the abbreviation letter that describes what you see in the picture.



- A. cardan joint
- B. propeller shaft
- C. clutch
- D. differential
- E. gearbox
- F. final drive

Task 2: Read and match. Read the devices of auto repair and detect and make a match. Try to point out some more special facilities for the auto repair in English.

A. driving wheel	() 1. 输出扭矩
B. front engine front wheel drive type	() 2. 自动变速器
C. final drive	() 3. 驱动轮

续表

D. front engine rear wheel drive type	() 4. 半轴
E. AT (automatic transmission)	() 5. 主减速器
F. hybrid electric vehicle	() 6. 传动轴
G. rear engine rear wheel drive type	() 7. 混合动力电动汽车
H. output torque	() 8. 发动机前置前轮驱动型
I. propeller shaft	() 9. 发动机前置后轮驱动型
J. axle shaft	() 10. 发动机后置后轮驱动型

Section two: The functions of driveline and differential

Dialogue A

A: May I ask a question?

B: Sure. What is it?

A: Which part is the driveline system of the car?

B: Well, I have to correct your mistake first. The driveline system is not a simple component, but an assembly composed of many parts.

A: Really? Is it so complicated?

B: Yeah. The parts between the engine and driving wheels all belong to the driveline of the car.

A: What does it include in detail?

B: The clutch, the gearbox, the propeller shaft, the final drive and the drive axle. There are also some parts that you cannot see directly, such as the differential and the axle shafts.

A: Then the driveline system must play an important role.

B: Absolutely. It is the driveline system that transfers the power from the engine to the wheel, which makes the car move.

A: Oh, I see. Thank you so much.

B: You're welcome.

Comprehending questions:

1. Where is the driveline system on a car?

2. Is it a simple part? Why?

3. What components does the driveline system include?

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

equal	confirm	be replaced	transmit	according to
-------	---------	-------------	----------	--------------

A: Good morning, Mr. Li. 1 the test result, the differential of rear wheel should be 2. We need your 3.

B: The differential? Why there is such a problem? What is the function of the differential part for a car?

A: Well. The power is 4 to the wheel through the power train system, including clutch, gearbox and propeller shaft, etc. Because the sub power to each wheel is 5, the car is easy to turn on one side without the differential.

B : Oh. The diffential is so important to a car. Then change a new one for me immediately. Thank you very much.

A: You are welcome.

Task 3: Practice

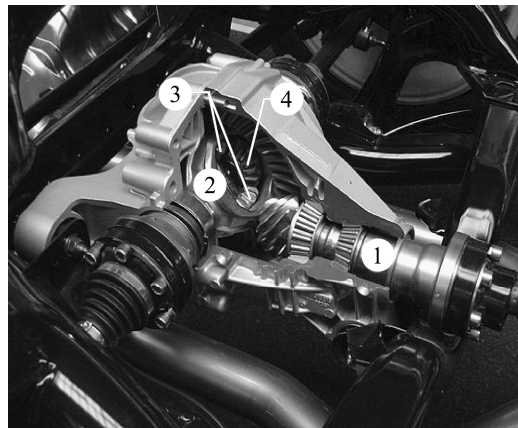
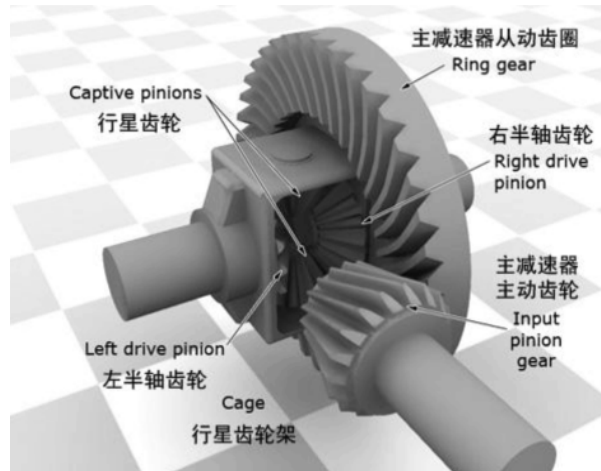
Practice dialogues according to the situations provided with your partner.

1. You are discussing about the components and functions of the driveline system to a car with a customer.

2. You are discussing about the components and functions of the differential part to a car with a customer. And you are explaining why the transmission should be replaced by a new one.

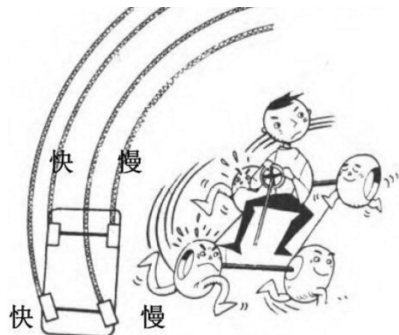
Reading materials A: What are the two tasks that differential performs?

A vehicle's wheels rotate at different speeds, mainly when turning corners. The differential is designed to drive a pair of wheels while allowing them to rotate at different speeds. The differential part is composed of differential housing, captive pinions, captive pinion shafts and drive pinions, etc.



propel shaft right drive pinion captive pinions left drive pinion

This is necessary when the vehicle turns, making the wheel that is traveling around the outside of the turning curve roll farther and faster than the other. That means when a vehicle is cornered the inner wheel moves through a shorter distance than the outer wheel. This means that the inner wheel must slow down and the outer wheel must speed up. During this period it is desirable that each driving wheel maintains its driving action. The differential performs these two tasks.



For example, if the car is making a turn to the right, the main crown wheel may make 10 full rotations. During that time, the left wheel will make more rotations because it has further to travel, and the right wheel will make fewer rotations as it has less distance to travel.

When the vehicle is traveling straight, the lever will divide the driving force equally and both discs will move the same amount. When the vehicle corners, the driving force will still be divided equally but the inner disc will now move through a smaller distance; This will cause the lever to pivot about its center which will prize forward the outer disc to give it a greater movement. This action shows that the torque applied to each driving wheel is always equal—hence the differential is sometimes called a torque equalizer.

New words:

1. curve	[kɜ:v]	n.	弯曲，曲线，冠状齿轮
		vt.	使弯曲
		vi.	成曲形
2. crown wheel			
3. lever	['li:və]	n.	杠杆，控制杆
4. pivot	['pivət]	n.	枢轴
5. apply to			应用于
6. hence	[hens]	adv.	因此
7. torque equalizer			转矩平衡

Notes:

1. The differential is designed to drive a pair of wheels while allowing them to rotate at different speeds.

差速器的设计是用来驱动两边车轮的同时允许两侧车轮以不同速度旋转。

while 加分词作伴随状语，allow sb. to do sth. 允许某人做某事

2. The differential part is composed of differential housing, captive pinions, captive pinion shafts and drive pinions, etc.

差速器由差速器壳、行星齿轮、行星齿轮轴和半轴齿轮等机械零件组成。

be composed of 由.....组成

differential housing 差速器壳，captive pinions 行星齿轮，captive pinion shafts 行星齿轮轴，drive pinions 半轴齿轮

3. For example, if the car is making a turn to the right, the main crown wheel may make 10 full rotations.

例如，如果车辆要向右转，主伞齿轮可能旋转 10 圈。

main crown wheel 主伞齿轮

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. All vehicle's wheels rotate at the same speed. ()
2. The differential part is composed of differential housing, captive pinions, captive pinion shafts and drive pinions, etc. ()
3. When the vehicle turns, it is necessary to make the wheel that is traveling around the outside of the turning curve roll farther and faster than the other. ()
4. If the car is making a turn to the right, the right wheel will make more rotations. ()
5. When the vehicle is traveling straight, the lever will divide the driving force equally. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

A vehicle's wheels 1 at different 2, mainly when 3 corners. The differential is designed to drive a pair of wheels while allowing them to rotate at 4. The differential part 5 differential housing, 6, captive pinion shafts and drive pinions, etc.

For example, if the car is making a turn to the 7, the main crown wheel may make 10 full rotations. During that time, the 8 wheel will make more 9 because it has further to travel, and the right wheel will make fewer rotations as it has less 10 to travel.

Task 3: Translate the following sentences into Chinese.

1. The differential is designed to drive a pair of wheels while allowing them to rotate at different speeds.
2. This is necessary when the vehicle turns, making the wheel that is traveling around the outside of the turning curve roll farther and faster than the other.
3. During that time, the left wheel will make more rotations because it has further to

travel, and the right wheel will make fewer rotations as it has less distance to travel.

4. When the vehicle corners, the driving force will still be divided equally but the inner disc will now move through a smaller distance; this will cause the lever to pivot about its center which will prize forward the outer disc to give it a greater movement.

Reading materials B: Factors influencing the stability and control of vehicle

Stiff tires at the front and soft ones at the rear or a center of gravity too far to the rear result in 'over steer', so that the rear tends to swing round in cornering, with possible instability in cornering or maneuvering.

As speed around corners increases, the steering wheel has to be rotated further and further to get around a particular corner, until finally, if understeering is very pronounced, the vehicle refuses to take the corner at all, and if the wheel is rotated still further, the front wheels skid and the vehicle goes straight on.

It will be clear that understeering characteristics, although unlikely to be increased by changes in loading, can, however, be increased by underinflated front tyres, or by combining radial tyres on the rear with crossply tyres on the front wheels, although this change in steering characteristics should be more readily detectable and less likely to cause difficulty than increased oversteering.

In the previous discussion, attention has been confined to circumstances in which the vehicle has not begun to skid out of control, although this may well be end result of cornering or maneuvering at too high a speed whether the vehicle oversteers or understeers, or indeed has neutral steering (that is, the front wheels and rear wheels have the same cornering stiffness).

Tyre/road adhesion, as measured by the coefficient of friction μ between tyre and road surface at the relevant speed, has an even greater influence on whether control is lost than the steering characteristics of the vehicle.

The coefficient of friction μ is equal to the maximum force in the plane of the roads which the tyre can exert divided by the vertical load at the tyre/road interface $\mu = F/W$ where F is tyre force and W the load.

On dry roads, μ for car tyres is always high and does not vary appreciably with speed, except when a locked wheel skids along a road at high speed and melting of the rubber or of the road surface takes place in the tyre track, when the coefficient may de-

crease below the normal value of 0.8 to 1.0.

On wet roads there are two coefficients of friction; the first comes into operation when the vehicle is actually skidding, either forwards with locked wheels, or sideways; the second, when the wheels are rolling and pointing in the direction of travel, is a higher coefficient, sometimes twice as great as the sliding coefficient, and is produced in the direction of travel, when the brakes are applied progressively until the wheel is almost skidding, and approximately at right angles to the direction of travel to oppose the outward centrifugal force in cornering, and to prevent sideways sliding.

New Words:

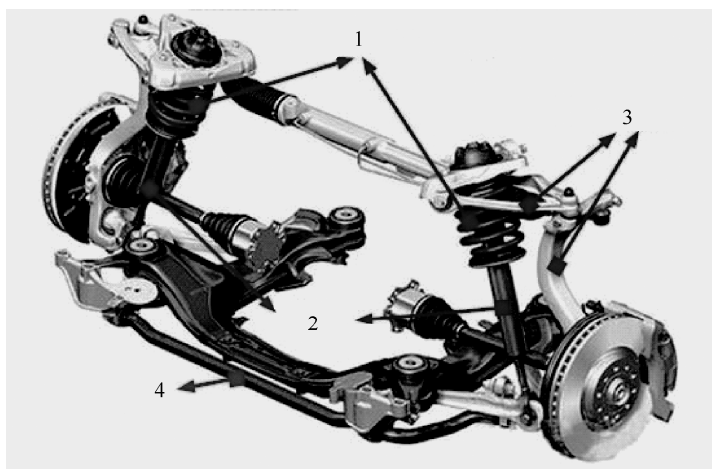
1. absolutely	['æbsə,lu:tli:]	adv.	绝对地
2. confirm	[kən'fə:m]	vt.	确认
3. coefficient	[,kəʊə'fɪʃənt]	n.	程度, 系数
4. curve	[kə:v]	n.	曲线
5. desirable	[di'zaiərəbl]	adj.	可取的
6. driveline	['draivlain]	n.	动力传动系统
7. equal	['i:kwəl]	adj.	相等的
8. hence	[hens]	adv.	因此
9. maneuver	[mə'nu:və]	vi.	机动
10. pivot	['pɪvət]	vi.	转动
11. skid	[skɪd]	vi.	打滑
12. stability	[stə'biliti]	n.	稳定性
13. according to			根据
14. axle shaft			半轴
15. captive pinion			行星齿轮
16. cardan joint			万向节
17. driving wheel			驱动轮
18. final drive			主减速器
19. hybrid electric vehicle			混合动力电动车
20. output torque			输出扭矩

Lesson 11: Suspension System (悬挂系统)

Section one: Main components of Suspension System and Wheels

Task 1: Talking and Practicing

Look at the following pictures, there are four parts in it. You will see the four parts of the pictures. Choose the best statement which matches with every part.



1-damper spring; 2-damper; 3-guide mechanism; 4-stabilizer bar

A. which absorbs the road's shock & vibration not to be transmitted from the road to the car body;

B. when happening the roll, which controls car's left & right stroke to balance the car position;

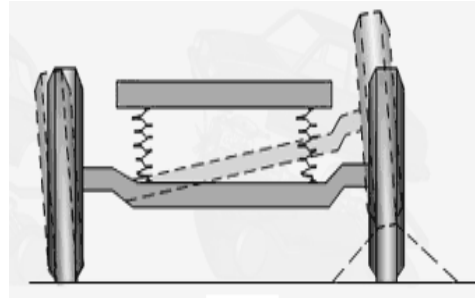
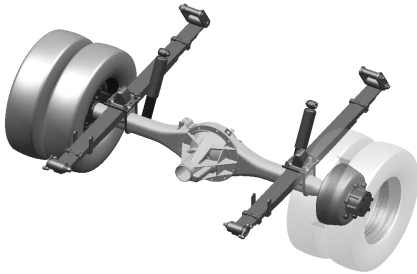
C. which absorbs the car body's up & down vibration energy owing to spring, it improves the car's stability & passenger's comfort;

D. which is critical to the performance of the suspension, which determines the wheel alignment parameters and its dynamics.

Task 2: Read the materials of suspension system and make a match.

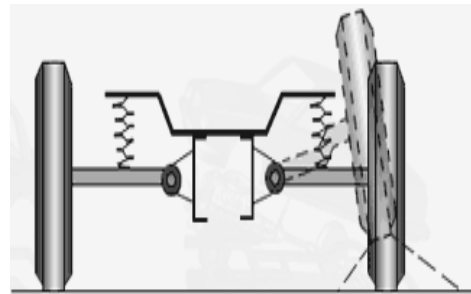
A. Rigid axle suspension

LH/ RH wheels are connected & fixed to axle.



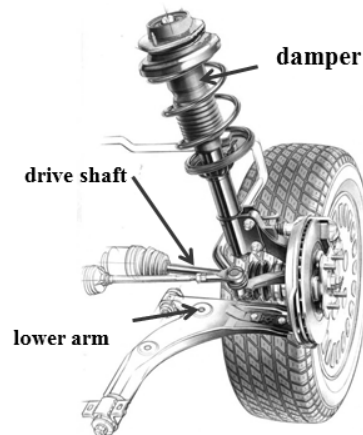
B. Independent suspension

LH/ RH wheels are independent and perform up & down action each.



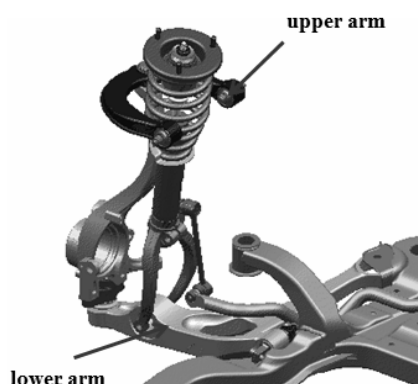
Section two: The structure of front Suspension System

A . Macpherson strut suspension



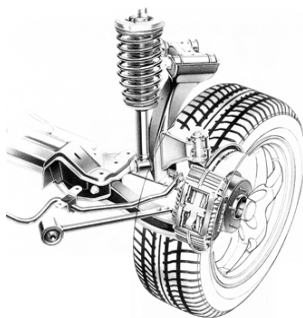
- most general type.
- structure is simple, cost & weight is advantageous.
- layout arranging is limited (disadvantageous).
- car: accent, Getz, matrix.

B . Double wish bone suspension



- layout arranging is more advantageous for driving stability & driving feeling.
- cost, weight & engine room space availability is more disadvantageous.
- car: sonata, grandeur.

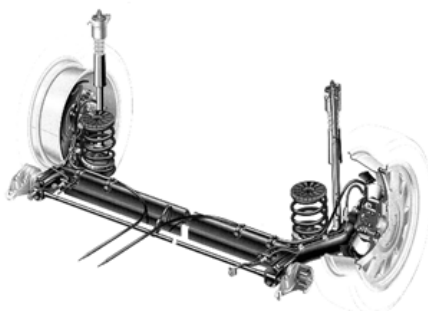
C . Multi-link suspension



- layout arranging is more advantageous for driving stability & driving feeling.
- it needs the high level's experience & technology.
- car: Audi A4.

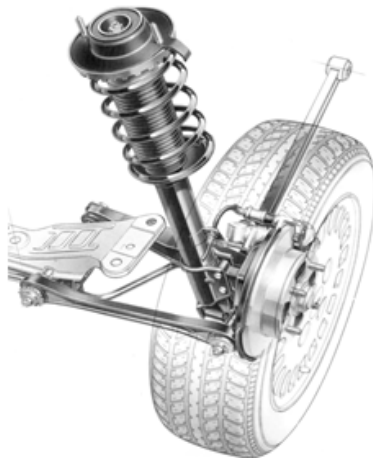
Task 3: The structure of rear suspension system

A. Torsion beam (pivot beam)



- car inside layout & cost is advantageous.
- weight is disadvantageous.
- for small car.
- car: accent, Getz.

B. Dual link suspension



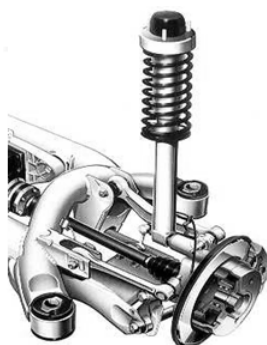
- most general type.
- cost & weight is advantageous.
- car: matrix, hd coupe.

C. Semi trailing arm suspension



- structure is simple.
- space availability is advantageous.
- transverse stiffness is weak.
- car: Trajet.

D. Multi-link suspension



- layout arranging is more advantageous for driving stability & driving feeling.
- most automobile maker's models are applied to the patent.
- car: Sonata, Grandeur.

Task 4: Make a match.

A. LH/ RH wheels are fixed to axle	() 1. Independent suspension
B. Structure is simple, cost and layout arranging is disadvantageous	() 2. Multi-link suspension
C. LH/ RH wheels are independent	() 3. Rigid axle suspension
D. Layout arranging is advantageous for driving stability & driving feeling, weight & engine room space availability is disadvantageous	() 4. Semi trailing arm suspension
E. Space availability is advantageous; transverse stiffness is weak	() 5. Macpherson strut suspension
F. Layout arranging is more advantageous for driving stability & driving feeling, needs the high level's experience & technology	() 6. Double wish bone suspension

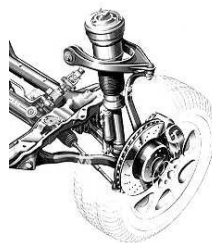
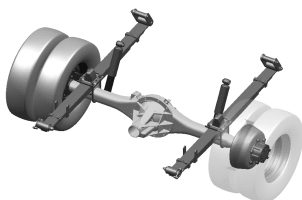
New words:

- | | | | |
|--------------------|----------------|-----|---------------------|
| 1. damper | ['dæmpə(r)] | n. | 制音器；减震器 |
| 2. guide mechanism | | | [机]导向机构 |
| 3. stabilizer | ['steɪbəlaɪzə] | n. | 稳定剂；稳定器；安定装置 |
| 4. guide | [gaɪd] | n. | 指南；向导；入门书 |
| | | vt. | 引导；带领；操纵 |
| | | vi. | 担任向导 |
| 5. mechanism | ['mekənɪzəm] | n. | 机制；原理，途径；进程；机械装置；技巧 |
| 6. shock absorber | | | 减震器，缓冲器 |

7. vibration	[var'breɪʃən]	n.	振动；犹豫；心灵感应
8. absorb	[əb'sɔ:b]	vt.	吸收；吸引；承受；理解；使.....全神贯注
9. stability	[stə'biliti]	n.	稳定性；坚定，恒心
10. dynamic	[dai'næmik]	adj.	动态的；动力的，动力学的；充满活力的，精力充沛的；不断变化的，充满变数的
		n.	动态；动力，推动变化的力量；动力学；活力
11. rigid	['rɪdʒɪd]	adj.	严格的；僵硬的；(规则、方法等)死板的；刚硬的，顽固的
12. rigid axle suspension			非独立悬架
13. LH/RH , Left Hand/Right Hand			右手(边)/左手(边)
14. independent suspension			独立悬架
15. Macpherson strut suspension			麦弗逊悬架
16. double wish bone suspension			双叉臂式独立悬架，双原骨式悬架
17. torsion beam			扭杆梁
18. dual link suspension			双连杆式悬架
19. semi trailing arm suspension			半拖曳臂式悬架

Reading materials A: Component's structure & Function

Spring

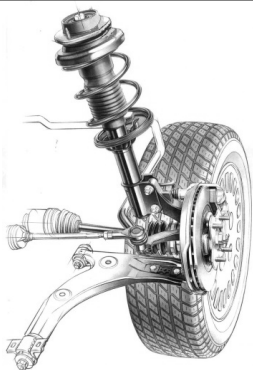


Leaf Spring

- leaf spring also supports vehicle's load
- friction of spring plates makes the driving feeling not comfortable
- the absorbability of elastic energy is not better than coil spring

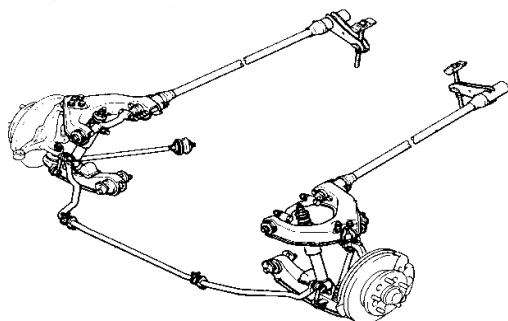
Air Spring

- controlling is easy
- realizing the low spring rate is easier than metal spring, so driving feeling is better comfortable
- spring characteristic is un-linear type



Coil Spring

- manufacturing is easy & the efficiency is good
- cost is low & designing is flexible
- layout arranging is more advantageous



Torsion Bar Spring

- accumulated elastic energy per unit volume is best of all

Reading materials B: Independent suspension

The chassis of a passenger car must be able to handle the engine power installed. Everimproving acceleration, higher peak and cornering speeds, and decelerating lead to significantly increased requirements for safer chassis. Independent suspension follow this trend. Their main advantages are:

- a) Little space requirement;
- b) A kinematic and/or elastic-kinematic toe-in change, tending towards under steering is possible;
- c) Easier steering ability with existing drive;
- d) Low weight;

e) No mutual wheel influence.

The last two characteristics are important for good road-holding, especially on bends with uneven road surface.

New Words:

1. load	[ləʊd]	n.	装载, 担子, 负担
2. comfortable	['kʌmfətəbl]	adj.	舒适的
3. absorbability	[əb,sɔ:bə'bɪlɪtɪ]	n.	吸收性
4. elastic	[ɪ'læstɪk]	adj.	弹性的
5. manufacturing	[,mænjʊ'fæktʃərɪŋ]	adj.	制造的
6. torsion bar spring			扭杆弹簧
7. kinematic	[,kɪnɪ'mæɪtɪk]	adj.	运动学的, 运动学上的
8. toe-in	[,təʊ'ɪn]	n.	前束
9. leaf spring			钢板弹簧
10. air spring			空气弹簧
11. leaf spring			叶片弹簧
12. coil spring			螺旋弹簧
13. road-holding			路面附着性能
14. elastic-kinematic			弹性运动

Notes:

1. be able to do sth. 能做某事

They're able to translate the sentences into English.

2. lead to 导致

Ever improving acceleration, higher peak and cornering speeds, and decelerating lead to significantly increased requirements for safer chassis.

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. The absorbability of elastic energy of coil spring is better than leaf spring. ()
2. Driving feeling of air spring is better comfortable. ()
3. Manufacturing of coil spring is not easy & the efficiency is good. ()
4. Independent suspension have Easier steering ability. ()
5. Both wheels of independent suspension is independent. ()

Task 2: Fill in the table in English or Chinese.

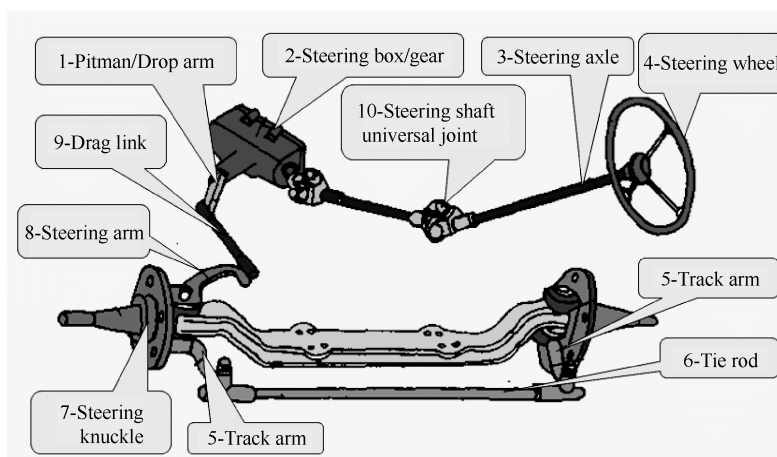
	English	Chinese
1	coil spring	
2	shock absorber	
3		非独立悬架
4	independent suspension	
5		麦弗逊式独立悬架
6	torsion bar spring	
7		双连杆式悬架
8	leaf spring	
9	road-holding	
10		前束

Lesson 12: Steering System (转向系统)

Section one: Basic Components of Steering System

Task1: Practising.

Look at the following picture, there are many parts in it. Please translate every statement of the parts and write Chinese parts name in the following table.

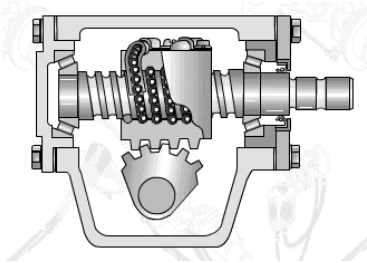


1		6	
2		7	
3		8	
4		9	
5		10	

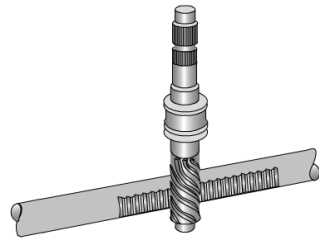
Section two: List the main types of Steering box

Task 2: Matching the pictures with the statements.

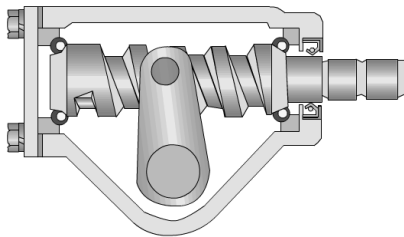
Look at the following four pictures. For the pictures you will read four statements. Choose the best statement which matches with every picture.



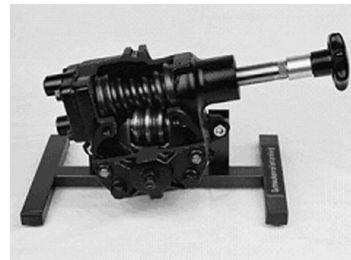
Picture 1 _____



Picture 2 _____



Picture 3 _____



Picture 4 _____

A. worm and roller

B. rack and pinion

C. worm and peg

D. recirculation ball

Reading materials A: The operation theory of automobile Steering device

Steering system is a kind of device which changes the car's proceeding direction randomly, and consists of force input, enlarged force & force output systems operation theory.

force input: universal joint

there is the universal joint which changes the direction of steering force between the steering column & steering gear.

enlarged force: pump, control v/v etc

it generates the additional steering force to reduce the driver's steering wheel operation force.

force output: gear box

steering gear changes the steering wheel's torque & turning displacement properly, and transmits the force to tyre using the link.

when we turn the handle, the steering force is transmitted to the knuckle spindle through the steering gear & link devices (pitman arm, relay rod & knuckle arm) knuckle spindle which operates the turning movement centering around the king pin changes the front wheels' motion \Rightarrow lh/ rh knuckles are connected to the tie rod through the knuckle arm, so one side wheel's movement could be transmitted to the opposite side wheel.

New Words:

1. gear	[giə]	n. 齿轮；装置，工具；传动装置 vi. 接上；调和 vt. 使适应；装上齿轮；用齿轮连接
2. knuckle	['nʌkl]	n. (指人)指关节；膝关节，肘；铰结，肘形接 vt. 用指关节打
3. steering gear		转向器
4. track arm		梯形臂，转向臂
5. tie rod		横拉杆
6. Pitman /Drop arm		转向摇臂
7. Steering knuckle		转向节
8. steering shaft universal joint		转向万向节
9. steering axle		转向轴
10. recirculation ball		循环球转向器
11. rack and pinion		齿轮齿条转向器
12. worm and peg		蜗杆曲柄指销式
13. worm and roller		蜗杆蜗轮式

Comprehending questions:

1. What are the main components of the steering system?

2. In the steering system, What's the function of universal joint?

3. In the steering system, What's the function of gear box?

4. Do you know how the steering system completes steering function?

Reading materials B: The development of steering system

Along with automobile electronic technology swift and violent development, the people also day by day enhance to the motor turning handling quality. The motor turning system change, the hydraulic pressure boost from the traditional machinery changes (Hydraulic Power Steering ,is called HPS) ,the electrically controlled hydraulic pressure boost changes (Electric Hydraulic Power Steering, is called EHPS) , develops the electrically operated boost steering (Electric Power Steering is called EPS) , finally also will transit to the line controls the steering system(Steer By Wire, will be called SBW).

The machinery steering system is referred by pilots physical strength achievement changes the energy, in which all power transmission is mechanical, the automobile changes the movement is operated the steering wheel by the pilot, transmits through steering system by changes the control mechanism, diverter and major part changes the gearing to be composed.

Because this way passes on easily by the wheel the reacting force to the steering wheel, therefore has to the pavement behavior response keen merit, but simultaneously also easy to have phenomena and so on goon and oscillation, also its load bearing efficiency relative weak, therefore mainly applies on the compact car and the pickup truck , at present the majority of low end passenger vehicle uses is the gear rack type machinery steering system.

Along with the vehicles carrying capacity increase as well as the people to the vehicles handling quality request enhancement, the simple mechanical type steering system were already unable to meet the needs, the power steering system arise at the historic moment ,it could rotate the steering wheel while the pilot to provide the boost ,the power steering system divides into the hydraulic pressure steering system and the electrically operated steering system 2 kinds. Hydraulic pressure steering system is at present using the most widespread steering system.

The hydraulic pressure steering system increased the hydraulic system in the mechanical system foundation , including hydraulic pump , V shape band pulley , dill tubing , feed installment, boost installment and control valve. It is with the aid of in the motor car engine power actuation hydraulic pump, the air compressor and the generator and so on, by the fluid strength, the physical strength or the electric power increase the pilot to operated motor turning facilely, reduced the labor intensity , enhanced the travel security.

The hydraulic pressure boost steering system from invented already had about half century history to the present, might say was one kind of more perfect system, because its work reliable , the technology mature still widely is applied until now. It takes the power supplied by the hydraulic pump, after oil pipe-line control valves to power hydraulic cylinder feed ,through the connection rod impetus rotation gear movement ,many changes the boost through the change cylinder bore and the flowing tubing head pressure size, from this achieved changes the boost the function. The traditional hydraulic pressure type power steering system may divide into generally according to the liquid flow form : ordinary flow type and atmospheric pressure type 2 kinds of types, also may divide into according to the control valve form transfer the valve type and the slide-valve type.

At present our country produces on the commercial vehicle and the passenger vehicle uses mostly is the electrically controlled hydraulic pressure boost steering system, it is quite mature and the application widespread steering system. Although the electrically controlled hydraulic servo alleviated the traditional hydraulic pressure from certain degree to change between the portability and the road feeling contradiction, however it did not have fundamentally to solve the HPS system existence insufficiency, along with automobile microelectronic technology development, automobile fuel oil energy conservation request as well as global initiative environmental protection, it in aspect and so on arrangement, installment, leak-proof quality, control sensitivity, energy consumption, attrition and noise insufficiencies already more and more obvious, the steering system turned towards the electrically operated boost steering system development.

New Words:

1. violent

['vaɪələnt]

adj. 暴力引起的 ; 剧烈的 ,(风 , 爆炸等) 猛烈的 , 狂暴的 ;

			感情强烈的；颜色强烈的
2. enhance	[ɪn'hɑːns]	vt.	提高，增加；加强
3. motor	['məʊtə(r)]	n.	马达，发动机
4. hydraulic	[haɪ'drɔːlɪk]	adj.	水力的，水压的；用水发动的
5. boost	[buːst]	vt.	促进，提高；增加；吹捧；向上推起
		vi.	宣扬；行窃，偷窃
		n.	提高，增加；帮助；吹捧；加速[助推]器
6. machinery	[mə'ʃiːnəri]	n.	(总称) 机器；机关，组织；机器运转部分；机械装置
7. pilot	['paɪlət]	n.	飞行员；引航员；向导；[机械学]导向器（或轴）
		vt.	驾驶；试验；试点；为（船舶）引航（或操舵）
		adj.	试验性的；导向的；驾驶员的；辅助的
8. diverter	[daɪ'vɜːtə]	n.	[电]分流器，分流调节器，分流电阻；转向器，(推力)换向器
9. react	[rɪ'ækt]	vi.	反应，作出反应；影响；起反作用
		vt.	使发生相互作用；反抗；重演
10. pavement	['peɪvmənt]	n.	人行道；硬路面；铺过的路面
11. simultaneously	[ˌsɪmə'l'teɪnɪəsli]	adv.	同时地
12. generator	['dʒenəreɪtə(r)]	n.	发电机，发生器；电力公司；生产者，创始者
13. impetus	['ɪmpɪtəs]	n.	动力；促进；势头；声势
14. widespread	['waɪdspred]	adj.	分布广的；普遍的；广泛应

			用；普及的
15. enhancement	[ɪn'hɑːnsmənt]	n.	增强；增加；提高；改善
16. microelectronic	[ˌmaɪkrəʊɪˌlek'trɒnɪk]	adj.	微电子学的
17. conservation	[ˌkɒnsə'veɪʃn]	n.	保存；保护；避免浪费；对自然环境的保护
18. insufficiencies	[ˌɪnsə'fɪʃənsɪ]	n.	不充足，不足
19. Hydraulic Power Steering (HPS)			液压助力转向
20. Electric Hydraulic Power Steering(EHPS)			电控液压助力转向
21. Electric Power Steering (EPS)			电动助力转向
22. Steer By Wire (SBW)			线控转向技术
23. band pulley			带轮
24. air compressor			空气压缩机；风泵
25. commercial vehicle			商用车
26. passenger vehicle			乘用车

Notes:

1. Along with automobile electronic technology swift and violent development, the people also day by day enhance to the motor turning handling quality.

along with 随着；day by day 一天天

随着汽车电子技术的迅猛发展，人们对汽车转向操纵性能的要求也日益提高。

2. The machinery steering system is referred by pilots physical strength achievement changes the energy, in which all power transmission all is mechanical, the automobile changes the movement is operates the steering wheel by the pilot, transmits through steering system by changes the control mechanism, diverter and major part changes the gearing to be composed.

这里 is referred 是被动语态，in which 引导的是非限制性定语从句。

其中所有传力件都是机械的，汽车的转向运动是由驾驶员操纵方向盘，通过转向器和一系列的杆件传递到转向车轮而实现的。机械转向系由转向操纵机构、转向器和转向传动机械大部分组成。

3. Because this way passes on easily by the wheel the reacting force to the steering wheel...

是个原因状语从句.....。

4. Hydraulic pressure steering system is at present using the most widespread steering system.

at present 现在, 当前

5. The hydraulic pressure steering system increased the hydraulic system in the mechanical system foundation, including hydraulic pump, V shape band pulley, drill tubing, feed installment, boost installment and control valve.

including 是现在分词短语作状语

6. The traditional hydraulic pressure type power steering system may divide into generally according to the liquid flow form:

divide into 分成..., according to 根据

传统液压式动力转向系统出按液流的形式分为:

7. Although the electrically controlled hydraulic servo alleviated the traditional hydraulic pressure from certain degree to change between the portability and the road feeling contradiction, however it did not have fundamentally to solve the HPS system existence insufficiency...

Although, however 引导的是让步状语从句

Task 1: Fill in the table in English or Chinese.

	English	Chinese
1		商用车
2	passenger vehicle	
3		发电机
4	hydraulic power steering	
5	steer by wire	
6		电控液压助力转向
7		发动机
8	air compressor	
9		转向器
10	band pulley	

Task 2: Fill in the blanks with the suitable words according to the text.

1. Along with automobile electronic technology swift and _____ development, the people also day by day enhance to the motor turning _____ quality.

2. The _____ pressure steering system increased the hydraulic system in the Mechanical system foundation, including hydraulic _____, V shape _____,

dill tubing, feed installment, boost installment and control valve...

3. At present our country produces on the _____ vehicle and the _____ vehicle uses mostly is the electrically controlled hydraulic pressure boost steering system.

4. The hydraulic pressure _____ steering system from invented already had about half century history to the present , might say was one kind of more perfect system, because its work _____, the technology mature still widely is applied until now.

5. Along with automobile _____ technology development, automobile fuel oil energy conservation request as well as global initiative environmental protection.

Task 3: Translate the following sentences into Chinese.

1. At present the majority of low end passenger vehicle uses is the gear rack type machinery steering system.

2. Hydraulic pressure steering system is at present uses the most widespread steering system.

3. The hydraulic pressure steering system increased the hydraulic system in the mechanical system foundation, including hydraulic pump, V shape band pulley, dill tubing, feed installment, boost installment and control valve.

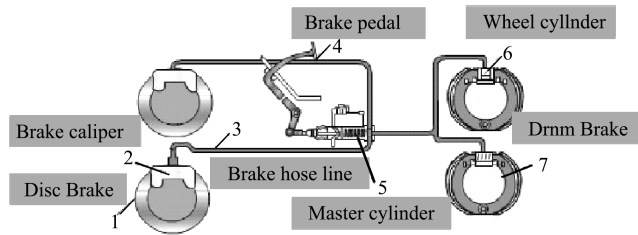
4. The hydraulic pressure boost steering system from invented already had about half century history to the present, might say was one kind of more perfect system, because its work reliable, the technology mature still widely is applied until now.

5. At present our country produces on the commercial vehicle and the passenger vehicle uses mostly is the electrically controlled hydraulic pressure boost steering system, it is quite mature and the application widespread steering system.

Lesson 13: Brake System (制动系统)

Section one: Main components of brake system

Look at the following picture, there are many parts in it. Please translate every statements of the parts and write chinese parts name in the following table.



1		2	
3		4	
5		6	
7			

Section two: The functions of brake system

Energy is required when a vehicle is accelerated from rest to a certain speed. A proportion of that energy is now stored in the vehicle and is called kinetic energy. In order to reduce the speed of the vehicle, the brakes have to convert the kinetic energy to heat energy; the speed of conversion governs the rate at which the vehicle slows down.

Main parts of braking system contains: energy-supplying device、 control device、 transmission device and the brake.

The types of braking system

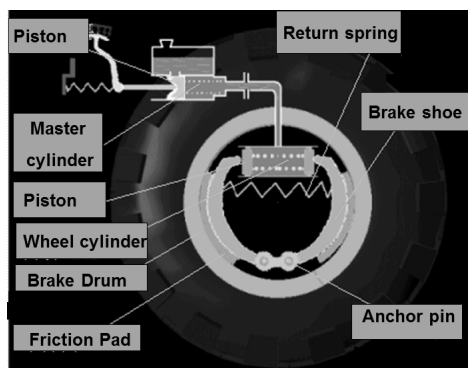
The three types of braking systems are in use today: service braking system, parking braking system and additional retarding-braking system.

The service braking system and the parking braking system have separate control and transmission devices. The service braking system is normally foot-operated, while the parking braking system is hand-operated.

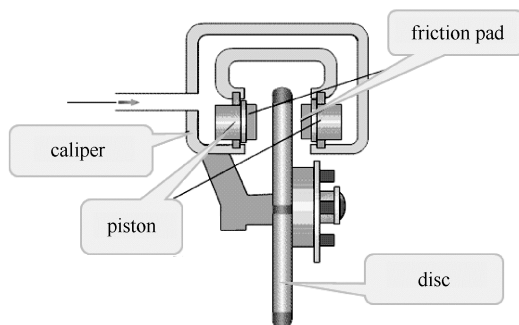
The types of the brake

Two types of brake are used in modern cars: drum brakes and disc brakes.

Since 1976, all cars have used disc brakes on the front wheels. Most cars use drum brakes on the rear wheels. In both drum and disc brakes, a hydraulic system applies the brakes. The hydraulic system connects the brake pedal to the brake parts at each wheel.



Drum brake



Disc brake

New Words:

- | | | | |
|--|-------------|------|------------|
| 1. caliper | ['kælɪpə] | n. | 卡钳；卡尺 |
| 2. kinetic | [kai'netik] | adj. | 动力（学）的；运动的 |
| 3. braking system | | | 制动系统 |
| 4. service braking system | | | 行车制动系 |
| 5. parking braking system | | | 驻车制动系 |
| 6. additional retarding braking system | | | 缓速制动系 |
| 7. drum brake | | | 鼓式制动器 |
| 8. disc brake | | | 盘式制动器 |
| 9. master cylinder | | | 制动主缸 |
| 10. wheel cylinder | | | 制动轮缸 |
| 11. brake drum | | | 制动鼓 |
| 12. friction pad | | | 摩擦片 |
| 13. return spring | | | 回位弹簧 |
| 14. brake shoe | | | 制动蹄 |
| 15. anchor pin | | | 支撑销 |

Task 1: Fill in the blanks with the suitable words according to the text.

1. _____ is required when a vehicle is accelerated from rest to a certain speed.
2. In order to reduce the speed of the vehicle, the brakes have to convert the _____ energy to heat energy.
3. Main parts of braking system contains: _____ device、 control device、 transmission device and the brake.
4. The three types of braking systems are in use today: _____ braking system, _____ braking system and additional retarding-braking system.
5. Most cars use _____ brakes on the rear wheels.

Reading materials A: Anti-lock brake system

An anti-lock braking system, or ABS (from the German, Antiblockier system) is a safety system which prevents the wheels on a motor vehicle from locking while braking.

A rotating road wheel allows the driver to maintain steering control under heavy braking by preventing a skid. While ABS offers improved vehicle control in some circumstances, it can also present disadvantages including increased braking distance on slippery surfaces such as ice, packed snow, gravel, steel plates and bridges, or anything other than dry pavement. ABS has also been demonstrated to create a false sense of security in drivers, who may drive more aggressively as a result.

Since initial widespread use in production cars, anti-lock braking systems have evolved considerably. Recent versions not only prevent wheel lock under braking, but also electronically control the front-to-rear brake bias. This function, depending on its specific capabilities and implementation, is known as electronic brakeforce distribution (EBD), traction control system (TCS or ASR), emergency brake assist (BA, EBA or HBA), or electronic stability control (ESP, ESC or DSC).

The function of an anti-lock, or anti-skid, braking system is to prevent the wheels from locking under hard braking. Maximum braking force is obtained just before the wheels lock and skid. Such anti-skid systems are useful on slippery surfaces, such as ice and snow, where the wheels may lock easily.

New Words:

- | | | | |
|--------------|------------|-----|------|
| 1. lock | [lɒk] | vt. | 锁，锁上 |
| 2. anti-lock | ['æntilɒk] | n. | 防抱死 |

3. skid	[skɪd]	vi.	(通常指车辆)侧滑,打滑;滑行
4. slippery	['slɪp(ə)rɪ]	adj.	滑的;狡猾的;不稳定的
5. pavement	['peɪvmənt]	n.	人行道;硬路面;铺过的路面
6. antiblockier system			防抱死制动系统
7. braking distance			制动距离
8. road wheel			行走轮
9. steering control			转向控制
10. front-to-rear brake bias			前后制动偏差
11. electronic brakeforce distribution			电子制动力分配
12. traction control system			牵引力控制系统
13. emergency brake assist			紧急辅助制动
14. electronic stability control			电子稳定控制系统

Notes:

1. An anti-lock braking system, or ABS (from the German, Anti blockier system) is a safety system which prevents the wheels on a motor vehicle from locking while braking.

which 引导一个定语从句

防抱死制动系统 (ABS, 或 anti-blockier 系统) 是一个防止车轮在制动时汽车锁止的安全系统。

2. While ABS offers improved vehicle control in some circumstances, it can also present disadvantages including increased braking distance on slippery surfaces such as ice, packed snow, gravel, steel plates and bridges, or anything other than dry pavement.

While 引导一个时间状语从句

在某些当情况下, ABS 提供了车辆控制的改进,但是它也存在缺点,包括在光滑的表面如冰、积雪、砾石、钢板和桥梁上,或其他任何比干燥路面光滑的地方增加制动距离等。

3. Since initial widespread use in production cars, anti-lock braking systems have evolved considerably.

Since 引导一个时间状语从句

从最初广泛使用在生产汽车的制动系统,防锁方面大有进化。

4. Where the wheels may lock easily.

Where 引导了一个定语从句：在车轮可能容易锁止的地方。

Task 2: Fill in the table in English or Chinese.

	English	Chinese
1	lock	
2		侧滑
3		刹车距离
4	electronic stability control	
5		制动系统
6		电子制动力分配
7	emergency brake assist	
8		牵引力控制系统

Reading materials B: The brake system

Brakes, what do they do?

The simple answer: they slow you down.

The complex answer: brakes are designed to slow down your vehicle but probably not by the means that you think. The common misconception is that brakes squeeze against a drum or disc, and the pressure of the squeezing action is what slows you down. This in fact is only part of the equation. Brakes are essentially a mechanism to change energy. When you are travelling at speed, your vehicle has kinetic energy. When you apply the brakes, the pads or shoes that press against the brake drum or rotor convert that energy into thermal energy via friction. The cooling of the brakes dissipates the heat and the vehicle slows down. It's the First Law of Thermodynamics, sometimes known as the law of conservation of energy. This states that energy can't be created nor destroyed, it can only be converted from one form to another. In the case of brakes, it is converted from kinetic energy to the thermal energy.

Angular force. Because of the configuration of the brake pads and rotor in a disc brake, the location of the point of contact where the friction is generated also provides a mechanical moment to resist the turning motion of the wheel.

If you ride a motor bike or drive a race car, you are probably familiar with the term brake fade, used to describe what happens to brakes when they get too hot. A good example is coming down a mountain pass using your brakes rather than your engine to

slow down. As you start to come down the pass, the brakes on your vehicles heat up, slowing you down. But if you keep using them, the rotors or drums stay hot and get no chance to cool off. At some point they can't absorb any more heat so the brake pads heat up instead. In every brake pad there is the friction material that is held together with some sort of resin and once this starts to get too hot, the resin starts to vapourise, forming a gas. Because the gas can't stay between the pad and the rotor, it forms a thin layer between the two whilst trying to escape. The pads lose contact with the rotor, reducing the amount of friction and voila, complete brake.

So how do the engineers design brakes to reduce or eliminate brake fade? For older vehicles, you give that vapourised gas somewhere to go. For newer vehicles, you find some way to cool rotors off more effectively. Either way you end up with cross-drilled or grooved brake rotors. While grooving the surface may reduce the specific heat capacity of the rotor, its effect is negligible in the grand scheme of things. However, under heavy braking once everything is hot and the resin is vapourising, the grooves give the gas somewhere to go, so the pad can continue to contact the rotor, allowing you to stop.

The whole understanding of the conversion of energy is critical in understanding how and why brakes do what they do, and why they are designed the way they are. If you have ever watched Formula 1 racing, you'll see the front wheels have huge scoops inside the wheel pointing to the front. This is to duct air to the brake components to help them cool off because in F1 racing, the brakes are used viciously every few seconds and spend a lot of their time trying to stay hot. Without some form of cooling assistance, the brakes would be fine for the first few corners but then would fade and become near useless by half way around the track.

New Words:

1. squeeze	[skwi:z]	vt. 挤；紧握；勒索
2. mechanism	['mek(ə)nɪz(ə)m]	n. 机制；原理，进程；机械装置；技巧
3. friction	['frɪkʃ(ə)n]	n. 摩擦，[力]摩擦力
4. dissipate	['dɪsɪpət]	vt. 浪费；使...消散
5. resin	['rezɪn]	n. 树脂；松香

6. eliminate	[ɪ'lɪmɪneɪt]	vt. 消除 ; 排除
7. vapourise	[veɪ'pəraɪz]	vt. 蒸发 , 气化
8. groov	[gru:v]	n. 凹槽 , 槽 ; 最佳状态 ; 惯例
9. conversion	[kən'veɜ:ʃ(ə)n]	n. 转换 ; 变换
10. scoop	[sku:p]	n. 勺 ; 铲子 ; 独家新闻 ; 凹处
11. duct	[dʌkt]	n. 输送管 , 导管
12. viciously	['vɪʃəsli]	vt. 狠狠地
13. kinetic energy		动能
14. the First Law of Thermodynamics		热力学第一定律
15. Angular force		角向力
16. brake pads		刹车片
17. brake fade		制动失效
18. motor bike		摩托车
19. Formula 1 racing		一级方程式赛车

Notes:

1. The complex answer: brakes are designed to slow down your vehicle but probably not by the means that you think.

其中“that you think”是个定语从句。

2. The common misconception is that brakes squeeze against a drum or disc, and the pressure of the squeezing action is what slows you down.

“that brakes squeeze against...what slows you down”都是表语从句。

3. This states that energy can't be created nor destroyed, it can only be converted from one form to another.

“that energy can't be created nor destroyed”是定语从句。

4. Because of the configuration of the brake pads and rotor in a disc brake, the location of the point of contact where the friction is generated also provides a mechanical moment to resist the turning motion of the door.

“where the friction is generated also provides a mechanical moment to resist the turning motion of the door.”是定语从句。

5. If you ride a motor bike or drive a race car, you are probably familiar with the

term brake fade, used to describe what happens to braker when they get too hot.

“If you ride a motor bike or...”是条件状语从句。

6. As you start to come down the pass, the brakes on your vehicles heat up, slowing you down.

“as”引导的是时间状语从句。

7. At some point they can't absorb any more heat so the brake pads heat up instead.

“so”引导的是结果状语从句。

8. In every brake pad there is the friction material that is held together with some sort of resin and once this starts to get too hot, the resin starts to vapourise, forming a gas.

“that”引导的是定语从句。

9. While grooving the surface may reduce the specific heat capacity of the rotor, its effect is negligible in the grand scheme of things.

“While grooving”是分词短语作状语。

10. However, under heavy braking once everything is hot and the resin is vapourising, the grooves give the gas somewhere to go, so the pad can continue to contace the rotor, allowing you to stop.

“once”引导的是条件从句。

Task 3: Read and judge. Read the passage and judge whether the statement is true or false.

1. Brakes are only designed to slow down your vehicle. ()

2. This states that energy can't be created nor destroyed, it can only be converted from one form to another. ()

3. In the case of brakes, the braking system converted from kinetic energy to the thermal energy. ()

4. When the pads contact with the rotor, redusing the amount of friction and voila, brake completly. ()

5. Because in F1 racing, in order to duct air to the brake components to help them cool off, so the brakes are used viciously every few seconds and spend a lot of their time trying to stay hot. ()

Task 4: Translate the following sentences into Chinese.

1. The common misconception is that brakes squeeze against a drum or disc, and the

pressure of the squeezing action is what slows you down. This in fact is only part of the equation.

2. In the case of brakes, the vehicle is converted from kinetic energy to the thermal energy.

3. If you ride a motor bike or drive a race car, you are probably familiar with the term brake fade, used to describe what happens to braker when they get too hot. A good example is coming down a mountain pass using your brakes rather than your engine to slow down.

Chapter 4

Automobile Electric Equipments (汽车电气设备)

Lesson 14: Lighting System (汽车照明系统)

Section one: List the main parts of lighting system

What you can see from the outside of an automobile is the exterior features: First of all, the lights are very attractive. They are headlights, turning lights, fog lights, tail-lights like brake lights and so on. These lights help drivers to have a good visibility in poor conditions and give signals to show the intentions.

The interior lights include instrument-panel lights, various warning indicator, and courtesy lights which turn on when a car door is opened.



multi reflector halogen headlights



fog light



daytime running lights

New Words:

1. multi	[mʌlti]	pref.	多
2. reflect	[ri`flekt]	vt.	反映；反射，照出；反省；
		vi.	反射，映现；深思
3. halogen	[`hælədʒən]	n.	[化学]卤素
4. increase	[in`kri:s]	n.	增加，增长；提高
		vt.	增加，加大
		vi.	增加，增大；繁殖
5. visibility	[,vɪzə`bɪlɪti]	n.	能见度，可见性；能见距离； 明显性
6. instrument-panel light			仪表灯
7. courtesy light			门控灯
8. headlamp			前灯
9. fog lamp			雾灯
10. turn signal			转向灯
11. tail lamp			尾灯
12. brake lamp			制动灯
13. reversing lamp			倒车灯
14. daytime running lights (DRL)			日间行车灯
15. multi reflector halogen headlights			反射器卤素前照灯

Comprehending questions:

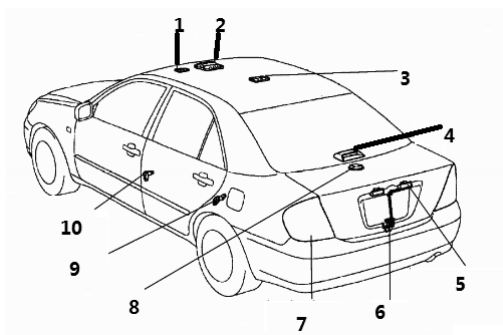
1. How many kinds of light in the automobile?

2. What is the function of lighting system?

3. From the outside of an automobile, what kind of lights can we see?

4. What kind of lights can we see in the interior lights ?

Section two: Look at the following pictures, there are ten parts in it. Please translate the best statement of every part into Chinese.



1	1-variety lamp
2	2-roof control box assy with map lamp
3	3-room lamp
4	4-central high mount stop lamp
5	5-license plate lamp
6	6-luggage compartment door lock
7	7-Rear combination lamp
8	8-luggage compartment lamp
9	9-rear door courtesy lamp
10	10-front door courtesy lamp

New Words:

- | | | | |
|---------------|--------------|------|-------------------------------|
| 1. exterior | [eks'tiəriə] | adj. | 外面的, 外部的, 外表上的, 表面的 |
| 2. feature | ['fi:tʃə] | n. | 特征, 特点; 容貌, 面貌; (期刊的) 特辑; 故事片 |
| 3. attractive | [ə'træktiv] | adj. | 有魅力的, 引人注目的; 迷人的; 招人 |

			喜爱的
4. visibility	[vɪzə'bɪlɪti:]	n.	能见度；可见性；可见距离；清晰度
5. signal	['sɪgnəl]	n.	信号符号
6. turning light			转向灯
7. fog light			雾灯
8. brake light			刹车灯

Task 1: Fill in the blanks with the suitable words according to Section one and two.

1. What you can see from the outside of an automobile is the _____ features.
2. The exterior lights include headlights, _____ lights, _____ lights, tail-lights like brake lights and so on.
3. The exterior lights help drivers to have a good _____ in poor conditions and give _____ to show the intentions.
4. The interior lights include instrument-panel lights, various warning, _____, and courtesy lights which turn on when a car door is opened.

Task 2: Fill in the table in English or Chinese.

	English	Chinese
1	room lamp	车内灯
2		中央刹车灯
3		行李舱
4	rear combination lamp	
5	courtesy lamp	
6		牌照灯

Reading materials: A: Colour of light emitted and the functions of lighting system

Generally, lamps facing rearward must emit red light, lamps facing sideward and all turn signals must emit amber light (though in North America rear turn signals may emit either amber or red light), lamps facing frontward must emit white or selective yellow light, and no other colours are permitted except on emergency vehicles.

The lighting system of a motor vehicle consists of lighting and signaling devices mounted or integrated to the front, sides and rear of the vehicle. The purpose of this sys-

tem is to provide illumination for the driver to operate the vehicle safely after dark, to increase the conspicuity of the vehicle, and to display information about the vehicle's presence, position, size, direction of travel, and driver's intentions regarding direction and speed of travel.

New Words:

1. emit	[ɪ'mɪt]	vt.	发出，放射；发行；发表
2. amber	['æmbə]	adj.	琥珀色的；琥珀制的
3. sideward	['saɪdwəd]	adj.	侧面的；横的
4. frontward	['frʌntwəd]	adv.	朝前地
5. emergency	[ɪ'mɜːdʒ(ə)nsɪ]	n.	紧急情况；突发事件；非常时刻
6. signal	['sɪgn(ə)l]	n.	信号；暗号；导火线
7. illumination	[ɪ,ljuːmɪ'neɪʃən]	n.	照明；[光] 照度；启发
8. conspicuity	[kənspi'kjuːəti]	adj.	显著的
		n.	显眼；醒目性
9. intention	[ɪn'tenʃ(ə)n]	n.	意图；目的；意向；愈合

Notes:

1. 第一段中的几个 facing 都是现在分词短语作状语。
2. The lighting system of a motor vehicle consists of lighting and signaling 中的 lighting 是定语，lighting and signaling 都是 of 的宾语。
3. The purpose of this system is to provide illumination for the driver to operate the vehicle safely after dark, to increase the conspicuity of the vehicle, and to display information about the vehicle's presence, position, size, direction of travel, and driver's intentions regarding direction and speed of travel 中 to provide illumination...是作表语，其他 to operate the..., to increase the conspicuity..., to display information ...都是作目的状语。

Reading materials B: Why does a policeman touch a tail light?

If you've ever been pulled over, or if regularly watch police shows like cops, you may have seen a police officer touch a car's taillight when approaching a stopped vehicle.

Identification of Vehicle

Officers often press their hand against a car, typically the taillight or trunk, in order to leave fingerprints and that indicate the officer came in contact with the vehicle, according to the Santa Monica Police Department's information office. Officers employ this practice as a safety precaution. Should the officer be attacked or go missing, the fingerprint will provide evidence that can confirm the perpetrator's vehicle.

Although video cameras are installed in most police cars, many officers still practice this physical safety precaution.

Surprise

Older police teaching methods advocated tapping the trunk or taillight in order to surprise the driver in the car. This was thought to prevent those in the car from hiding illegal substances and to help the officer in identifying anything suspicious.

Common Practice

Police officers are no longer advised to tap on the taillights of cars, as this gives the officer's position away, making them more susceptible to attack.

New Words:

1. trunk	[trʌŋk]	n.	树干；躯干；象鼻；汽车车尾的行李厢
2. precaution	[prɪ'kɔːʃ(ə)n]	n.	预防，警惕；预防措施
3. perpetrator	['pɜːpətreɪtə(r)]	n.	犯罪者；作恶者；行凶者
4. advocate	['ædvəkeɪt]	vt.	提倡，主张，拥护
5. suspicious	[sə'spɪʃəs]	adj.	可疑的；怀疑的；多疑的
6. susceptible	[sə'septɪb(ə)l]	adj.	易受影响的；易感动的；容许...的
7. tail light			尾灯
8. pull over			靠边停车

Notes:

1. If you've ever been pulled over, or if regularly watch police shows like cops, you may have seen a police officer touch a car's taillight when approaching a stopped vehicle. 两个“if”都是引导条件状语从句，“when”引出个分词短语作状语的短语。

2. Should the officer be attacked or go missing, the fingerprint will provide evidence that can confirm the perpetrator's vehicle. 这里“Should”引出一个省掉“if”的虚拟

条件句，而且是被动语态。

3. This was thought to prevent those in the car from hiding illegal substances and to help the officer in identifying anything suspicious.

这是一个被动句，而“in”后的“identifying anything suspicious”是“in”的介词宾语。

4. Police officers are no longer advised to tap on the taillights of cars, as this gives the officer's position away, making them more susceptible to attack.

这里“no longer”是“不再”的意思，“as”引导的是原因状语从句，“making...”后是分词短语作状语。

Task 3: Fill in the table in English or Chinese according to reading materials.

	English	Chinese
1	turn signal	
2		照明
3		信号装置
4	common practice	
5	pull over	
6		尾灯
7		预防措施

Task4: Read and judge. Read the passage and judge whether the statement is true or false according to reading materials.

1. Lamps facing rearward must emit red light, lamps facing sideward and all turn signals must emit white light. ()

2. The lighting system of a motor vehicle consists of lighting and signaling devices mounted or integrated to the front, sides and rear of the vehicle. ()

3. Officers often press their hand against a car, typically the taillight or trunk, in order to leave fingerprints and that indicate the officer came in contact with the vehicle. ()

4. Tapping the trunk or taillight can help the officer in identifying anything suspicious. ()

Task 5: Fill in the blanks with the suitable words according to reading materials.

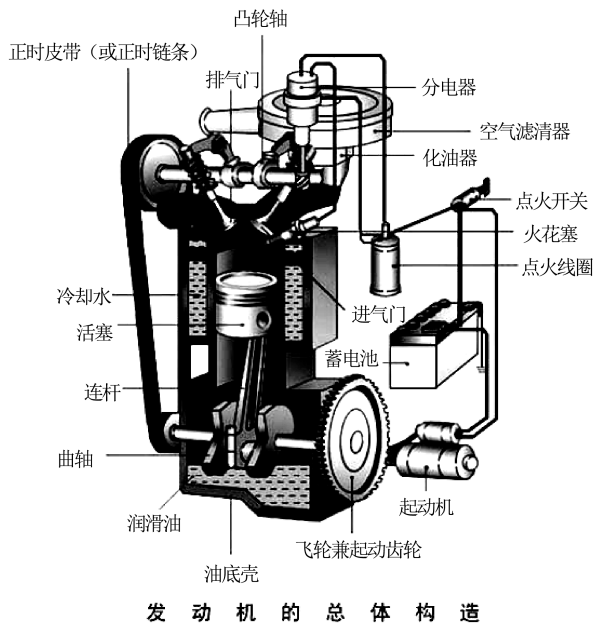
1. Generally, lamps facing rearward must emit _____, lamps facing sideward and all turn signals must emit _____.
2. The lighting system of a motor vehicle consists of _____ and _____ devices mounted or integrated to the front, sides and rear of the vehicle.
3. Officers often press their hand against a car, typically the taillight or trunk, in order to leave _____ and that indicate the officer came in contact with the vehicle.
4. Older police teaching methods advocated tapping the _____ or taillight in order to _____ the driver in the car.

Lesson 15: Starting System (起动系统)

Section one: Main components of starting system

Task 1: Talking and Practicing

Look at the following picture. You will find seven main parts on the picture. Choose and match.



part1: 点火开关 part2: 连杆 part3: 飞轮 part4: 起动机 part5: 油底壳 part6: 活塞 part7: 蓄电池

- A. Fly wheel B. Storage Battery C. oil pan D. piston
E. Ignition Switch F. connecting rod G. starter

Task 2: Read the passage, then answer the questions.

The “starting system”, the heart of the electrical system in your car, begins with the Battery. The key is inserted into the Ignition Switch and then turned to the start position. A small amount of current then passes through the Neutral Safety Switch to a Starter Relay or Starter Selenoid which allows high current to flow through the Battery Cables to the Starter Motor. The starter motor then cranks the engine so that the piston, moving downward, can create a suction that will draw a Fuel/Air mixture into the cylinder, where a spark created by the Ignition System will ignite this mixture. If the Compression in the engine is high enough and all this happens at the right time, the engine will start.

Questions :

1. What's the main content of the passage?

2. What does the starting system begin with?

3. Do you describe the starting course of a car in Chinese according to the text?

Section two: What's wrong with my starting system?**Dialogue A**

Task 1: Read the dialogue, then judge True or False and practice with your partner.

A: It is fine today, but I'm a little upset.

B: Why?

A: I got up early and wanted to go out, but I found my car wouldn't have started. I bought it only a few months ago, you know.

B: I'm sorry to hear that, there may be many reasons causing the problem, let me have a check.

A: Thank you.

B: I don't think it was caused by the ignition switch, the storage battery, or the take iron cable.

A: Then what caused the problem on earth?

B: Let me think. Oh, probably the starter. Let's check it.

A: Do you think so?

B: Yeah, you see, there is indeed something wrong with the starter.

A: Then do I need to change a new starter?

B: Yes, You'd better to change a new one. Do you mind waiting a while?

A: No problem. Thanks a lot.

B: (After a while) Well, you can get the car started.

A: Let me try. Good, you are a great mechanic! Thanks!

B: You are welcome.

Comprehending questions with "T or F" :

1. This conversation probably took place at home. ()
2. It was the storage battery of the car causing the problem. ()
3. The mechanic was of poor quality. ()
4. It was fine that day. ()
5. The customer was rude. ()

Dialogue B

Task 2: Read the dialogue, and choose the best answer for each questions.

Teacher Li: Good morning students.

Students: Good morning teacher.

Teacher Li: Welcome to our training room, today let's learn Auto Starting System, this is the starting system test bench.

Students: Yeah, it's so good.

Teacher Li: Ok, first of all, let's speak out some parts of the starting system you know. Who can first?

John: Can I have a try, Mr. Li?

Teacher Li: Please have a try.

John: This part is ignition switch, and this part is battery!

Teacher Li: Right! Exactly, we call this part storage battery.

John: Haha, I know! Thanks, Mr. Li !

Peter: Oh, Mr. Li ! I know that part, it's starting relay.

Teacher Li: Yes, it's starting relay ! Who know the others? Pole?

Pole: I'm sorry, I ...

Teacher Li: Oh, don't be nervous. let me tell you. This is starter cable, that is ground cable; this part is fly wheel, that part is starter.

Pole: Which part is the most important, Mr. Li ?

Teacher Li: Every part! Every part may influence the working of whole body, every part needs to be repaired when it is broken.

(ling—ling -ling)....

Teacher Li: Time's up, class is over, please review what we learned today, I'll check you next time. Goodbye everybody!

Students: Goodbye teacher!

Comprehending questions:

1. How do you feel the teacher? ()
 A. severe B. kind C. young D. old
2. How many parts of starting system are there according to this dialogue? ()
 A. five B. six C. seven D. eight
3. Where did this scene take place? ()
 A. class room B. school C. train room D. repair factory
4. Weren't the students lovely? ()
 A. Yes, they aren't B. No, they are
 C. Yes, they is D. Yes, they are
5. Will the teacher check the students next class? ()
 A. Yes, he will. B. No, he won't.
 C. We don't know. D. He didn't mention

Reading materials A: Automobile starting system function

Engines not self-starting ability, to make the engine state transition from static state to work, have to use force to drive the engine crank shaft made of suction (or form) combustible mixture in the cylinder and combustion expand, work cycle can automatically. Crank shaft under the action of external force began to turn it into an engine start automatically idle speed the whole process of operation, referred to as the starting of the engine.

Engine is most common ways of starting the human starting auxiliary engine starting and power starting three forms the human starting applies only to a few small power engine, on some cars only retained as the backup mode; auxiliary engine starter is main-

ly used in high power diesel engine; electric starting with simple structure is simple starting fast, low cost good reliability with repeated starting ability, and can remote control, thus is widely used in modern cars.

Task 3: Read and judge. Read the passage and judge whether the statement is true or false.

1. The engine is self-starting ability. ()
2. The crankshaft without external force can start turning. ()
3. Human starting is suitable for the high power engine. ()
4. Electric starting is widely used in modern cars. ()

Reading materials B: Vehicle air conditioning

Automotive air conditioning system is to realize the air inside the car refrigeration, heating, ventilation, and air purification device. It can provide comfortable driving environment for driving personnel, reduce the driver's fatigue strength, improve the driving safety.

Air conditioning unit has become one of the symbols of measuring whether the auto functions are complete. Auto-motive air conditioning system is to realize the air inside the car refrigeration, heating, ventilation, and air purification device. Usually can have the following work.

To adjust temperature: the temperature of the car's body feels appropriate temperature.

Regulating humidity: the humidity inside the car will be dispatched to the human body feel suitable humidity.

Adjust the airflow: adjust the car outlet of position, out of the wind direction and the size of the air volume.

Air purification: filter the dust and impurities in the air, or the air sterilization.

Now automotive air conditioning system based on the vehicle configuration has different devices is also different, generally low-grade cars only warm wind and ventilation, high-grade generally possess refrigeration and air purification device.

At present of one-piece is changes in temperature air conditioning system is widely used in cars.

It is decorated is type evaporator, warm wind radiators, centrifugal blower, the operating mechanism, etc. Together, called the air conditioner assembly.

Notes:

1. Engines not self-starting ability, to make the engine state transition from static state to work, have to use force to drive the engine crank shaft made of suction (or form) combustible mixture in the cylinder and combustion expand, work cycle can automatically.

该句是个并列句。其中主语为 :Engines not self-starting ability; to make the engine state transition from static state to work 是目的状语; have to use force to drive the engine crank shaft made of suction (or form) combustible mixture in the cylinder 是谓语宾语 ; and combustion expand, work cycle can automatically 为另一个分句。

2. refer to as 意思是

3. Auxiliary engine starter is mainly used in high power diesel engine. 这是一个被动语态句。

4. It can provide comfortable driving environment for driving personnel, reduce the driver's fatigue strength, improve the driving safety.

provide, reduce, improve 是并列谓语 , 后面跟各自的宾语。

5. Air conditioning unit has become one of the symbols of measure whether the auto functions are complete, auto air conditioning.

whether the auto functions are complete, auto air conditioning 是状语从句 , 意为 : 是否...

6. Now automotive air conditioning system based on the vehicle configuration has different devices is also different, generally low-grade cars only warm wind and ventilation, high-grade generally possess refrigeration and air purification device.

based on the vehicle configuration 是过去分词短语作定语。

Task 1: Read, complete and retell. Read the passage again and fill in the blanks with the given words.

ventilation	warm wind	air conditioner assembly	generally
emperature	widely used	based on	

Now automotive air conditioning system 1 the vehicle configuration has different devices is also different, 2 low-grade cars only 3 and 4 , high-grade generally possess refrigeration and air purification device.

At present of one-piece is changes in 5 air conditioning system is 6 in

cars.

It is decorated is type evaporator, warm wind radiators, centrifugal blower, the operating mechanism, etc. Together, called the 7.

Task 2: Translate the following material.

Air conditioning refrigeration function

Automotive air conditioning refrigerating system generally consists of compressor, electric clutch, condenser, evaporator, expansion valve, receiver dryer, hoses, cooling fan, vacuum solenoid, idle speed device and control system, etc, auto air conditioning high pressure and low pressure pipe lines, high voltage side including the compressor output side, high-pressure pipe, condenser, liquid dryer and liquid line; Low voltage side including evaporator, accumulation, compressor muffler road, input side and compressor oil pool.

New words:

1. compressor	[kəm'presə]	n.	压缩机
2. condenser	[kən'densə]	n.	冷凝器
3. evaporator	[i'væpəreitə]	n.	蒸发器
4. hose	[həʊz]	n.	管道
5. accumulation	[ə,kju:mju'leifən]	n.	积累器
6. consist of			由.....组成
7. etc.			等等
8. electric clutch			电控离合器
9. control system			控制系统
10. expansion valve			膨胀阀
11. idle speed device			怠速器
12. cooling fan			冷凝风扇
13. vacuum solenoid			真空电磁阀
14. high pressure pipe line			高压管路
15. low pressure pipe line			低压管路
16. high voltage side			高压侧

- | | |
|----------------------------|--------|
| 17. Low voltage side | 低压侧 |
| 18. compressor output side | 压缩机输出侧 |
| 19. high-pressure pipe | 高压管路 |
| 20. liquid dryer | 液干燥器 |
| 21. liquid line | 液体管路 |
| 22. muffler road | 回气管路 |
| 23. compressor input side | 压缩机输入侧 |
| 24. oil pool | 油池 |
| 25. compressor oil pool | 压缩机机油池 |

Lesson 16: Automobile Instrument Panels and Screens

(汽车仪表盘和显示屏)

Section one: Main components of automobile instrument panels and screens

Task 1: Talking and Practicing.

Look at the following four pictures. For the pictures you will read the following four phrases. Choose the best phrase which matches with every picture.



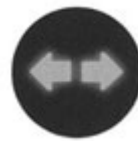
A



B



C



D

1. Front /rear fog lamps indicator
2. Turn signal indicator
3. Low fuel indicator
4. Washer fluid indicator

Task 2: Read and match. Read every short passage and make a match.

1. It can indicate if the door is fully closed. If the door is open or not fully closed, the very light will be on. It reminds the driver that the door is not fully closed. After the door is closed, the light goes out. ()

2. When the light is on, that means that you have set the parking brake. When you release the parking brake, it goes out. ()

3. It can show the working state of the battery. When you turn on the switch, it is on, and when the engine starts, it goes out. If it doesn't light, or it stays on, you should check the generator and circuit. ()

4. It can show the engine oil pressure. If the light is on, it indicates Lubrication system loses pressure. There may be leakage. At this moment, drivers should stop the car at once, shut down the engine and check it. ()

5. It can show that the engine coolant temperature is too high. When the light comes on, drivers should stop the car at once and shut down the engine. When it is cooled to the normal temperature, drivers can continue to drive. ()

6. It can show the state of the seat belt. According to the different types of automobiles, some of their light will be on for seconds to remind or put out until you fasten the seat belt. And some automobiles can send out the sound to remind. ()

7. It can show the wear pattern of the brake disc. Under the normal condition, the light goes out. When it lights, it reminds the driver to change the brake pad which has troubles or wears excessively. After repairing, the light goes out. ()

8. Width indicator is used to show the width lamp working condition, it is the extinguished state. When the width lamp is on, the indicating lamp was lit. ()

9. It shows if the headlight is in the state of high beam. Generally it is in the off state. When the high beam is turned on, the indicator will be also on. ()

10. O/D block indicator is used to show an automatic O/D block (Over-Drive) overdrive working state, when the O/D block lights flashing, indicating that O/D block has been locked. ()



A



B



C



D



E



F



G



H



I



J

Section two: The names of automobile instrument panels and screens

Read the dialogue, practice them with your partner and answer the comprehending questions:

Dialogue A

(Mr. Zhang is looking for something in the room.)

Miss Tao: Hi, Mr. Zhang. What are you looking for?

Mr. Zhang: Hi, Miss Tao, I'm looking for a booklet of the automobile. I forget the meaning of the term "ABS".

Miss Tao: ABS? Is it antilock brake system?

Mr. Zhang: Right ! That's it !

Miss Tao: Why do you want to know it?

Mr. Zhang: I want to know the functions of it and how to repair it.

Miss Tao: That's great. Let me help you.

Mr. Zhang: Thank you very much.

Task 1: Comprehending questions.

What is Mr. Zhang looking for?

What does "ABS" mean?

Who will help Mr. Zhang?

Dialogue B

Task 2: Read the dialogue, fill in the missing information with the suitable words, and practice them with your partner.

Tom: Hi, John. Can you 1 me?

John: Hi, Tom, I'll try. What's the matter?

Tom: There's something wrong 2 my car.

John: I'm sorry to hear that. Please tell me what's wrong with it. Maybe I can do

something 3 you.

Tom: The oil pressure indicator on the screen always 4 low.

John: Don't worry. Let me 5 it.

Tom: Can you 6 it?

John: Yeah. No problem.

Tom: Thanks a lot.

John: It's my pleasure.

Task 3: Translate the following words and expressions into Chinese.

1. Check engine system

2. Anti-lock brake system indicator

3. Supplemental restraint system indicator

4. Inner circulation indicator

5. TCS light

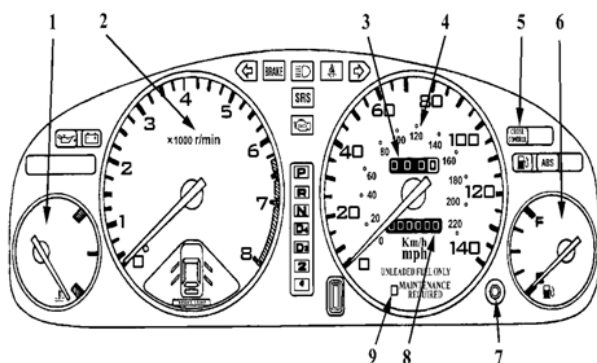
6. Electronic throttle indicator

7. Front /rear fog lamps indicator

8. Engine coolant temperature indicator

Reading materials A: How to read automobile instrument panels and screens.

The purpose of the dash gauges and indicator lamps is to keep the driver informed about the operating condition of the vehicle. If an abnormal condition occurs, the driver is informed by indicator lamp. The driver can seek service before damage occurs.



Indicator lamps use ON/OFF switch functions for operation, while gauges use a sending unit or sensor.

The Instrument Panel can be removed as an assembly after a few parts are removed to allow access to the retaining bolts. There is one self-aligning bulkhead connector on the left underside of the instrument panel replacing most of the main harness connectors. Once removed, the instrument panel can be serviced for replacement. Most of the parts of the instrument panel can be replaced individually without removing the complete instrument panel assembly. The typical instrument panel system is as above:

1—engine coolant temperature gauge

The gauge indicates the temperature of the fluid in the vehicle's coolant system.

2—tachometer

A tachometer is an instrument that measures the speed of rotation of a shaft or disk, as in a motor or other machine. The device usually displays the rate of revolutions per minute on a calibrated analog dial, but digital displays are increasingly common.

3—trip meter or trip odometer

Luxury vehicles often have multiple trip meters. Most trip meters will show a maximum value of 999.9. The trip meter may be used to record the distance traveled on each tank of fuel, making it very easy to accurately track the energy efficiency of the vehicle; another common use is resetting it to zero at each instruction in a sequence of driving directions, to be sure when one has arrived at the next turn.

4—speedometer

A speedometer is a device that measures the instantaneous speed of a land vehicle. Now universally fitted to motor vehicles, they started to be available as options in the 1900s, and as standard equipment from about 1910 onwards.

5—cruise control

Cruise control (sometimes known as speed control) is a system that automatically

controls the speed of a motor vehicle. The system takes over the throttle of the car to maintain a steady speed as set by the driver.

6—fuel level indicator or fuel gauge

A fuel gauge (or gas gauge) is an instrument used to indicate the level of fuel contained in a tank.

7—trip meter reset button

The trip meter reset button is a special button which is reset at any point in a journey, making it possible to record the distance travelled in any particular journey or part of a journey.

8—odometer

The mileometer (milometer) indicates distance traveled by a car or other vehicle. The device may be electronic, mechanical, or a combination of the two.

9—maintenance required

New Words:

1. instrument	['instrumənt]	n.	工具, 手段, 器械, 器具
2. bulkhead	['bʌlkhed]	n.	隔壁, 防水壁
3. tachometer	[tæ'kɒmitə]	n.	(发动机) 转速表
4. speedometer	[spi:'dɒmitə]	n.	车速表
5. odometer	[əʊ'dɒmitə]	n.	路程表
6. indicator	['indikeitə]	n.	指示灯
7. seek	[si:k]	vt.	寻找, 追求
8. gauges	[geidʒ]	n.	测量仪器
9. sensor	['sensə]	n.	传感器
10. assembly	[ə'sembli]	n.	装配
11. self-aligning	[,selfə'lainɪŋ]	a& n.	自行调整
12. panel	['pænl]	n.	盘, 板
13. underside	['ʌndəsaɪd]	n.	下侧, 底部
14. rotation	[rəʊ'teɪʃn]	n.	转数, 循环
15. sequence	['si:kwəns]	n.&v.	顺序, 排列顺序

16. instantaneous	[,instən'teiniəs]	a.	瞬间的
17. throttle	['θrɒtl]	n.	节流阀，
		vi.	节流
18. analog dial			模拟式拨盘
19. engine coolant temperature gauge			温度表
20. trip meter(trip odometer)			旅程表
21. cruise control			巡航控制
22. fuel level indicator(fuel gauge)			燃油表
23. trip meter reset button			旅程表归零按钮

Notes:

1. to keep the driver informed about the operating condition of the vehicle 是不定式作表语，keep “使得”的意思。

2. If an abnormal condition occurs, the driver is informed by indicator lamp. If 引导的是一个条件状语从句，意为“如果发生异常情况，指示灯就会告知司机。”

3. The trip meter may be used to record the distance traveled on each tank of fuel, making it very easy to accurately track the energy efficiency of the vehicle.

这是一个被动语态的句子，而 traveled on each tank of fuel 是过去分词短语作定语，making it very easy to accurately track the energy efficiency of the vehicle 是现在分词短语作状语。

4. Once removed, the instrument panel can be serviced for replacement.
once removed 是过去分词短语作状语，表示被动。

5. A tachometer is an instrument that measures the speed of rotation of a shaft or disk, as in a motor or other machine that measures the speed of rotation of a shaft or disk.

that 引导定语从句，修饰先行词 motor.

6. A speedometer is a device that measures the instantaneous speed of a land vehicle.

句子中 that 引导的也是一个定语从句。

7. The trip meter reset button is a special button which is reset at any point in a journey, making it possible to record the distance travelled in any particular journey or part of a journey.

其中, which is reset at any point in a journey 是定语从句, 而 making it possible to record the distance 是分词短语作定语, travelled in any particular journey or part of a journey 是过去分词短语作定语。

Reading materials B: How to read automobile instrument panels and screen.

Many of the indicator lights come on when you turn the ignition switch on, allowing you to see that they are working. If an indicator doesn't light during this time, it can't alert you if there is something wrong with the car, and you must check it now.

1. Anti-lock brake system indicator

When you turn on the switch, it lights up. And then after 3 or 4 seconds, it goes out. It can indicate that the system works normally. If it doesn't light, or it stays on, it shows that the system has troubles. At this moment, drivers can go on driving at low speed, but must avoid slamming the brakes on.

2. Check engine indicator

It can check the working state of the engine. When you turn on the switch, it lights up. And then after 3 or 4 seconds, it goes out. It can indicate that the engine works normally. If it doesn't light, or it stays on, it shows that the engine has troubles, and it needs repairing.

3. Inner circulation indicator

It can show the working state of the air-conditioning system. Generally, it is in the state of extinguishment. When you turn on the button of inner circulation and shut outer circulation, the indicator lights up.

4. TCS light

The TCS light can show the working state of the traction control system. It is often used in Japanese cars. The light comes on if the TCS has been closed.

5. Electronic throttle indicator

It is often used in a Volkswagen cars. When the cars start self-check, EPC indicator will light up for a few seconds, then it goes out. When it stays on, it shows that the car has troubles, and it needs repairing in time.

6. Supplemental restraint system indicator

It can show the working state of the air bag. When you turn on the switch, it lights

up. And then after three to four seconds, it indicates that the system has troubles.

Task 1: Read and judge. Read the paragraphs and judge whether the statement is true or false.

1. Supplemental restraint system indicator show the working state of the air bag. ()
2. The TCS light can't show the working state of the traction control system. ()
3. Electronic throttle indicator is often used in a Volkswagen cars. ()
4. When you turn on the switch, the anti-lock brake system indicator will light up. ()
5. When you turn on the button of inner circulation and shut outer circulation, the indicator goes out. ()

Task 2: Read, complete and retell. Read the passage and fill in the blanks with the given words or phrases.

Through	brake	disk	operation	wheel
drum	pad	maintained	controlled	applies to

The degree of braking a car is 1 by the strength that the driver 2 the brake pedal. 3 the master cylinder, pressure is transferred to a brake assembly at each 4. The two common 5 assemblies are the 6 brake and the 7 brake. When braking, the pressure can force the brake shoes against the brake drum and brake 8 against the brake disc in disc brake.

An efficient brake system is important for the safe 9 of the motor vehicle. It needs to be 10 regularly.

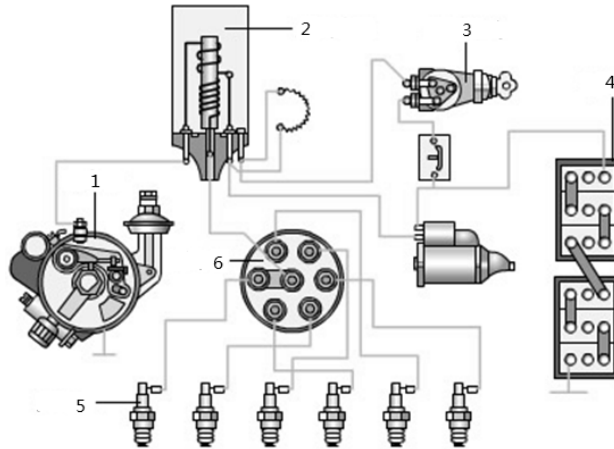
Task 3: Translate the following sentences into Chinese.

1. If an abnormal condition occurs, the driver is informed by indicator lamp.
2. Luxury vehicles often have multiple trip meters.
3. A fuel gauge (or gas gauge) is an instrument used to indicate the level of fuel contained in a tank.
4. It can check the working state of the engine.
5. It is often used in Japanese cars.

Lesson 17: Ignition System (点火系统)

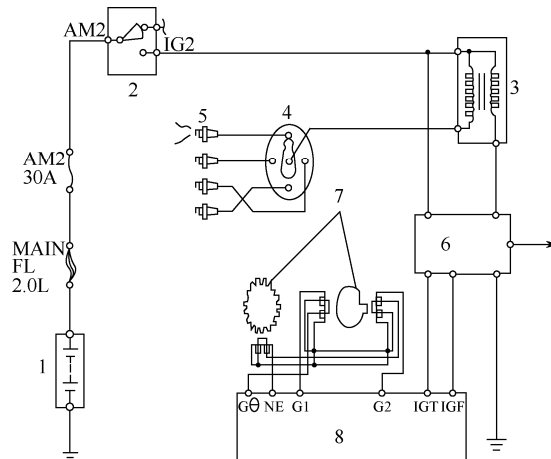
Section one: Main components of ignition system

Task 1: Talking and Practicing. Look at the following picture. You will read six statements. Choose the statements match with the numbers of the picture.



- A. It implies the spark plug.
- B. It implies the battery.
- C. It implies the distributor.
- D. It implies the ignition switch.
- E. It implies the ignition coil.
- F. It implies the breaker.

Task 2: Look at the following picture and choose the best answer.



1. The number 1 is _____.
A. breaker B. battery C. distributor
2. The number 2 is _____.
A. breaker B. battery C. ignition switch
3. The number 3 is _____.
A. ignition coil B. spark plug C. ignition switch
4. The number 4 is _____.
A. distributor B. spark plug C. igniter
5. The number 5 is _____.
A. spark plug B. igniter C. signal rotor
6. The number 6 is _____.
A. spark plug B. igniter C. signal rotor
7. The number 7 is _____.
A. spark plug B. igniter C. signal rotor
8. The number 8 is _____.
A. igniter B. signal rotor C. ECM

Section two: The functions of ignition system

Dialogue A

- A: Welcome to ShunFeng garage. What I can do for you?
- B: My car won't start!
- A: Let's check it for you.
- B: Fine.
- A: Oh, there is something wrong with your ignition system!
- B: What's problem ? Can you tell me ?
- A: Yeah! You can see there is something wrong with the spark plugs.
- B: Oh, can you change some new ones for me ?
- A: Certainly. Please wait a minute and sit here drinking a cup of tea.
- B: Thank you.
- (Half an hour later)
- A: Sir, your car is all right and you can drive it away.
- B: Thanks for your help!

Task 1: Comprehension questions.

1. What's wrong with the car?(There is something wrong with the ignition system.)

_____。

2. Does the repairer change some new spark plugs? (Yes, he does.)

_____。

3. Do you know how many spark plugs a car usually has? (Four)

_____。

Dialogue B

Task 2: Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

Differences point ignition systems	from electronic ignition	distributor component area
---------------------------------------	-----------------------------	----------------------------

(In an automobile English class)

Teacher: Hi, students! Today we'll learn 1 systems! Do you have any questions?

Student-A: What's the differ 2 traditional point ignition system, sir?

T: Oh, in fact, they differ only slightly from 3 ignition systems.

Student-B: Can you tell us what the 4 are in the systems, sir ?

T: Ah, well, electronic ignition systems differ from traditional point ignition systems in the 5 . Instead of a distributor cam, breaker plate, points, and condenser, an electronic ignition system has an armature, a pickup coil(called stator or sensor), and an electronic control module.

Student-B: Thanks, sir!

T: Do you have any questions?

Students:No!

T: Ok, class is over!

Reading materials A: Distributor-less ignition system

There are many different ignition systems. Most of these systems can be placed into one of three distinct: the conventional breaker point type ignition systems (in use since

the early 1900s); the electronic ignition systems (popular since the mid 70s); and the distributor-less ignition system.

The third type of ignition system is the distributor-less ignition. The spark plugs are fired directly from the coils. The spark timing is controlled by an Ignition Control Unit (ICU) and the Engine Control Unit (ECU). The distributor-less ignition system may have one coil per cylinder, or one coil for each pair of cylinders. Some popular systems use one ignition coil per two cylinders. This type of system is often known as the waste spark distribution method. In this system, each cylinder is paired with the cylinder opposite it in the firing order (usually 1 – 4 – 2 – 3 on 4 – cylinder engines or 1 – 4 – 2 – 5 – 3 – 6 on V6 engines).

The ends of each coil secondary leads are attached to spark plugs for the paired opposites. These two plugs are on companion cylinders that are at Top Dead Center (TDC) at the same time. But, they are paired opposites, because they are always at opposing ends of the 4 – stroke engine cycle. When one is at TDC of the compression stroke, the other is at TDC of the exhaust stroke. The one that is on compression is said to be the event cylinder and one on the exhaust stroke, the waste cylinder. When the coil discharges, both plugs fire at the same time to complete the series circuit.

Since the polarity of the primary and the secondary windings are fixed, one plug always fires in a forward direction and the other in reverse. This is different than a conventional system firing all plugs the same direction each time. Because of the demand for additional energy; the coil design, saturation time and primary current flow are also different. This redesign of the system allows higher energy to be available from the distributor-less coils, greater than 40 kilovolts at the rpm ranges.

The distributor-less ignition system uses either a magnetic crankshaft sensor, camshaft position sensor, or both, to determine crankshaft position and engine speed. This signal is sent to the ignition control module or engine control module, which then energizes the appropriate coil.

The advantage of no distributor, in theory, is:

1. No timing adjustments.
2. No distributor cap and rotor.
3. No moving parts to wear out.
4. No distributor to accumulate moisture and cause stalling problems.
5. No distributor to drive thus providing less engine drag.

The major components of a distributor-less ignition are:

1. ECU or Engine Control Unit.
2. ICU or Ignition Control Unit.
3. Magnetic Triggering Device such as the Crankshaft Position Sensor and the Camshaft position Sensor.
4. Coil Pack.

New Words:

1. distributor	[dɪ'strɪbjʊ:tə]	n.	分电器
2. condenser	[kən'densə(r)]	n.	电容器
3. wear	[weə(r)]	vi.	磨损
4. saturation	[ˌsætʃə'reɪʃn]	n.	磁饱和
5. series	['sɪəri:z]	n.	串联
6. wind	[wɪnd]	n.	缠绕
7. coil	[kɔɪl]	n.	(点火)线圈
8. transformer	[træns'fɔ:mə(r)]	n.	变压器
9. turn	[tɜ:n]	n.	匝数
10. term	[tɜ:m]	n.	术语, 学期, 条件
11. distinct	[dɪ'stɪŋkt]	a.	明显的, 清楚的
12. conventional	[kən'venʃənəl]	a.	传统的; 习用的
13. distribution n.	[ˌdɪstrɪ'bju:ʃn]	n.	分配, 分布
14. polarity	[pə'lærəti]	n.	极性; 反向性; 对立
15. crankshaft	['kræŋkʃɑ:ft]	n.	机轴
16. camshaft	['kæmʃɑ:ft]	n.	凸轮轴
17. exhaust stroke	[ɪg'zɔ:st strəʊk]		排气冲程, 排气行程
18. Breaker point type ignition system			触点型点火系统
19. Distributor-less ignition system			无分电器点火系统
20. Primary and secondary circuits			初级和次级电路
21. Magnetic field			磁场
22. High tension lead			高压导线
23. Distributor rotor			分电器转子, 分电器分火头
24. Spark plug			火花塞

Notes:

1. Most of these systems can be placed into one of three distinct. 这是一个被动句，意思是：这些系统中大部分可以分为三种类型之一。

2. be known as 意为：被看作是

3. These two plugs are on companion cylinders that are at Top Dead Center (TDC) at the same time.

这里 that 引导的是一个定语从句。

4. Since the polarity of the primary and the secondary windings are fixed, one plug always fires in a forward direction and the other in reverse.

这里 Since 引导了一个原因状语从句。

5. This signal is sent to the ignition control module or engine control module, which then energizes the appropriate coil.

本句中，which then energizes the appropriate coil 是一个非限制性定语从句。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

In the electronic ignition system, the points and condenser were replaced by electronics. On these systems, there were several methods used to replace the points and condenser in order to trigger the coil to fire. One method used a metal wheel with teeth, usually one for each cylinder.

A magnetic pickup coil senses when a tooth passes and sends a signal to the control module to fire the coil. Other systems used an electric eye with a shutter wheel to send a signal to the electronics that it was time to trigger the coil to fire. These systems still need to have the initial timing adjusted by rotating the distributor housing.

1. In the electronic ignition system, the points and condenser were replaced by electronics. ()

2. There were not several methods used to replace the points and condenser in order to trigger the coil to fire. ()

3. One method used a metal wheel with teeth, usually one for each cylinder. ()

4. A magnetic pickup coil senses when a tooth passes and sends a signal not to the control module to fire the coil. ()

5. These systems still needn't to have the initial timing adjusted by rotating the distributor housing. ()

Task 2: Read, complete and retell. Read the following passage and fill in the blanks with the information in the passage, and then try to retell the passage.

An automotive ignition system is _____ into two electrical circuits – the primary and secondary _____. The primary circuit carries low _____. This circuit operates only on battery current and is controlled by the breaker points and the _____. The secondary circuit coil (commonly called the coil wire), the distributor cap the _____ rotor, the spark plug leads and the spark plugs.

Task 3: Practice dialogues according to the situations provided with your partner.

1. Joe is a teacher of a vocational school and he is now explaining the Ignition Systems.
2. The engine of Zhangsan's new car fails to start. He is complaining this to a customer service staff.

Reading materials B: Electronic Ignition Systems

Electronic Ignition systems are not as complicated as they may first appear. In fact, they differ only slightly from conventional point ignition systems. Like conventional ignition systems, electronic systems have two circuits: a primary circuit and a secondary circuit. The entire secondary circuit is the same as in a conventional ignition system. In addition, the section of the primary circuit from the battery to the battery terminal at the coil is the same as in a conventional ignition system.

Electronic ignition systems differ from conventional ignition systems in the distributor component area. Instead of a distributor cam, breaker plate, points, and condenser, an electronic ignition system has an armature, a pickup coil, and an electronic control module.

Essentially, all electronic ignition systems operate in the following manner: With the ignition switch turned on, primary (battery) current flows from the battery through the ignition switch to the coil primary windings. Primary current is turned on and off by the action of the armature as it revolves past the pickup coil or sensor. As each tooth of the armature nears the pickup coil, it creates a voltage that signals the electronic module to turn off the coil primary current. A timing circuit in the module will turn the current on again after the coil field has collapsed. When the current is off, however, the magnetic field built up in the coil is allowed to collapse, which causes a high voltage in the secondary windings of the coil. It is now operating on the secondary ignition circuit, which is the same as in a conventional ignition system.

Troubleshooting electronic ignition systems ordinarily requires the use of a voltmeter and/or an ohmmeter. Sometimes the use of an ammeter is also required. Because of differences in design and construction, troubleshooting is specific to each system. A complete troubleshooting guide for your particular application can be found in the Chilton's Total Car Care manual.

New words:

1. complicated	['kɒmplɪkeɪtɪd]	adj.	复杂的, 难懂的
2. conventional	[kən'venʃ(ə)n(ə)l]	adj.	传统的
3. in addition			此外
4. armature	['ɑ:mətʃə;]	n.	电枢
5. essentially	[ɪ'senʃ(ə)li]	adv.	本质上, 本来
6. revolve	[rɪ'vɒlv]	n&v.	旋转
7. troubleshooting	['trʌbl,ʃu:trɪŋ]	n & v.	检修

Lesson 18: Sensors for Chassis and Body Systems (底盘和车体系统)

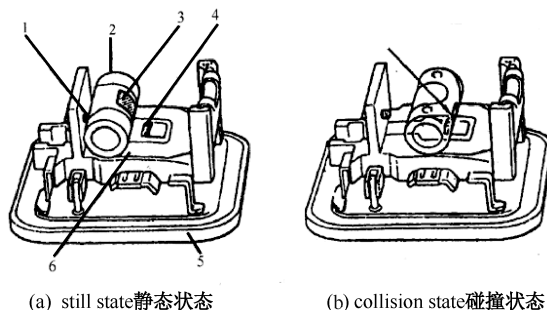
Section one: The basic sensors for chassis

Task 1: Discuss and Practice

Look at the following picture. Firstly, translate the Chinese words into English. Secondly, for each part there is a corresponding name and abbreviation letter. Choose the abbreviation letter that describes what you see in the picture.

First step:

Fig 1. Roller type sensor structure principle for auto security system.

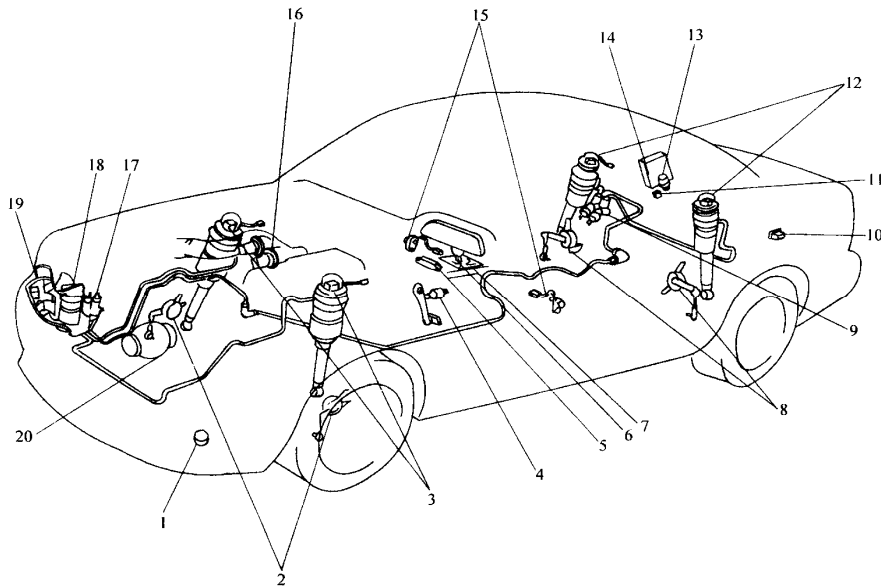


滚轴式传感器结构原理

Second step:

C. Latch B. Roller D. Trundle electronic contact A. Fixed contact Foundation
E. Laminated spring

Task 2: Look at the following picture, read and match. Read the basic sensors for chassis and make a match. Try to point out some more in English.



A. Brake light switch	() 1. 高度控制继电器
B. Altitude control relay	() 2. 车身高度传感器
C. LRC switch	() 3. 前悬架控制执行器
D. Changes the sensor	() 4. 制动灯开关转向转向传感传感器
E. Latter auto body position transmitter	() 5. 转向传感器
F. Altitude control switch	() 6. 高度控制开关
G. Altitude control on/off switch	() 7. LRC 开关
H. Automobilebody altitude transducer	() 8. 后车身位移传感器
I. Highlycontrol valveand overflow valve	() 9. 高度控制阀和溢流阀
J. Front suspension control actuator	() 10. 高度控制 on/off 开关

Section two: Main components of body systems

Dialogue A

Jean: Did you listen to Pro. Smith's lecture yesterday?

Judy: No, what it about?

Jean: It's about the quality of main components of auto body systems.

Judy: Oh, the quality of main components of auto body systems is very important for overall quality of vehicles. I heard Toyota of Japan had recalled over 700 different modes of cars due to the problem of accelerator pedals.

Jean: Yeah. The professor also mentioned the case.

Judy: What did he think about it ?

Jean: He thought that we could felt the latent crisis in the global auto chain by this case.

Judy: Oh, is it so serious ?

Jean: Yeah. The accelerator pedals of Toyota are manufactured by American CTS company which mainly produces sensors. CTS is only charge of production according to drawings, Toyota provides products design and finishes assembly works.

Judy: Oh, it's out of my imagination! However, Toyota is a big company, isn't it?

Jean: In fact, all big auto factories have not manufactured components any more by themselves. They only control designs and finish entire vehicle assembly. A reasonable erroneous scope is permitted for every outside processes component. While these components are placed in a numerous and disorderly auto system, the error of an individual is continuously enlarged, the possibility of problems increase.

Judy: Too terrible! This is a question considered by the big global companies.

Comprehending questions:

1. What reason caused the over 700 cars of Toyota recalled?

_____.

2. Is the quality of auto components only Toyota's problem?

_____.

3. What's your understanding about the saying "the latent crisis in the global auto chain"?

_____.

Dialogue B

Look at the following picture, then read the dialogues, fill in the missing information, and practice them with your partner.

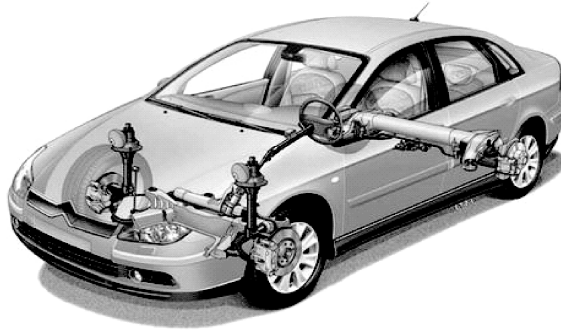
pressure

with

component

at

according



A: Look 1 the picture. You should recognize it.

B: Yeah, 2004 section Citroën C5.

A: Which 2 is drawn out?

B: It's the third generation initiative hydraulic pressure hand.

A: You know?

B: My teacher taught us before. Hydraulic 3 type adjustable hand is a suspension system to adjust the vehicle body 4 to hydraulic pressure changes. It's key part is a built in electronic hydraulic pressure integrated module, which may make an adjustment according to the expansion and contraction frequency and degree of the shock absorber comparing 5 vehicle driving speeds.

A: Woo! You've learnt more than me.

B: HaHa...It's not believable, is it?

Task 3: Practice

Practice dialogues according to the situations provided with your partner.

1. You are discussing about the quality of the components of auto body systems with your classmate.
2. You are discussing about the speed sensor with a customer.

Reading materials A: Electronic stability

When ESC detects a loss of steering control, ESC automatically applies the brakes to help manoeuvre the vehicle where the driver intends to go. Braking is automatically applied to individual wheels depending on the situation. ESC normally consists of the electronic systems of traction control and ABS using several sensors such as steering wheel angle sensor, yaw rate sensor, lateral acceleration sensor and wheel speed sensor to monitor the vehicle's direction of travel and the driver's intended course. ESC can not

be retrofitted and needs to be fitted before sale.

ESC is a proven safety system. At least 40% of fatal road accidents are the result of skidding. International studies show that ESC reduces skidding accidents between 25% and 35% depending on road conditions.

Although Electronic Stability Control is officially abbreviated as ESC, the technology on your car can be referred to as ESP (Electronic Stability Programme), DSC (Dynamic Stability Control), VSA (Vehicle Stability Assist), VSC (Vehicle Stability Control) or other alternatives depending on the brand of car. Unfortunately, ESC is not always fitted as standard or available on all vehicles. Ask your dealer for more information about ESC and whether it is fitted on your car or available as an option upon purchase.

It is safer that you never switch off ESC. ESC is always on when switching the ignition on. Some cars may allow the system to be switched off manually. Turning it off produces a warning light in the dashboard. It is advised to always drive with ESC switched on, except when activation would prevent the vehicle of pulling out of a slippery slope, ramp or other similar situations.

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. When ESC detects a loss of steering control, ESC automatically applies the brakes to help manoeuvre the vehicle where the driver intends to go. ()
2. ESC only consists of the electronic systems of traction control. ()
3. ESC can be retrofitted after sale. ()
4. International studies show that ESC reduces skidding accidents between 50% and 60%. ()
5. It is safer that you always switch on ESC. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

When ESC detects a 1 of steering control, ESC automatically applies the 2 to help manoeuvre the vehicle where the driver intends to go. ESC is a 3 safety system. that ESC reduces skidding 4 between 25% and 35% 5 on road conditions. Unfortunately, ESC is not always fitted as standard or 6 on all vehicles. Ask your dealer for more 7 about ESC and whether it is fitted on your car or

available as an option 8 purchase. It is safer that you never switch off ESC except when activation would prevent the vehicle 9 pulling out of a 10 slope, ramp or other similar situations.

Notes:

1. When ESC detects a loss of steering control, ESC automatically applies the brakes to help manoeuvre the vehicle where the driver intends to go.

当 ESC 查出转向失控时, ESC 就会自动开启制动装置以助于司机调整正要开动的汽车。

a loss of 失去.....;

apply...to... 把.....应用到.....;

intend to do sth 试图做某事;

where... 是关系副词, 引导定语从句, 修饰先行词 the vehicle;

detect(v.) 检测;

manoeuvre(v.) 调控;

2. ESC normally consists of the electronic systems of traction control and ABS using several sensors.

ESC 一般包括牵引力控制及用于若干个传感器的 ABS(防锁死刹车系统)电子系统。

consists of... (v.)包括.....

using several sensors 为现在分词短语, 作定语, 修饰 the electronic systems

3. Although Electronic Stability Control is officially abbreviated as ESC, the technology on your car can be referred to as ESP depending on the brand of car.

虽然电子稳定控制系统官方地被缩写为 ESC, 但根据汽车的品牌的不同, 此技术可被指为 ESP.

although 虽然.....但是, 引导让步状语从句;

be abbreviated as... 被缩写为.....;

be referred to as... 被指为, 被认为.....;

depend on... 根据, 取决于.....。

4. It is advised to always drive with ESC switched on, except when activation would prevent the vehicle of pulling out of a slippery slope, ramp or other similar situations.

除非开着 ESC 会阻止车辆从滑坡、斜坡或其他类似的情况走出困境, 否则建议行车时一直开着 ESC。

with 随着....., 有....., 表示伴随的状况;
 switched on 接通(电源), 开通;
 prevent ...of... 阻止(某人或某物)做....., of 后为 doing 的形式;
 pull out 拽出来

Reading materials B: Hybrid vehicle

A hybrid vehicle is a vehicle that uses two or more distinct power sources to move the vehicle. The term most commonly refers to hybrid electric vehicles (HEVs), which combine an internal combustion engine and one or more electric motors.

The hybrid vehicle typically achieves greater fuel economy and lower emissions than conventional internal combustion engine vehicles (ICEVs). These savings are primarily achieved by the following elements of a typical hybrid design.

Relying on both the engine and the electric motors for peak power needs results in a smaller engine sized more for average usage rather than peak power usage. A smaller engine can have less internal losses and lower weight.

Having significant battery storage capacity can store and reuse recaptured energy, especially in stop-and-go traffic typical of the city driving cycle. The significant amounts of energy during braking that are normally wasted as heat is recaptured. This regenerative braking reduces vehicle speed by converting some of its kinetic energy into electricity, depending upon the power rating of the motor/generator.

These features make a hybrid vehicle particularly efficient for city traffic where there are frequent stops, coasting and idling periods. In addition, noise emissions are reduced, particularly at idling and low operating speeds, in comparison to conventional engine vehicles. For continuous high speed highway use these features are much less useful in reducing emissions.

More optimistic views include predictions that hybrids would dominate new car sales in the U. S. and elsewhere over the next 10 to 20 years.

These analogs collectively suggest it would take at least 30 years for hybrid and electric vehicles to capture 80% of the U. S. passenger vehicle stock.

New Words:

1. hybrid	['haibrid]	n.	杂种; 混合物
		adj.	混合的; 杂种的

2. distinct	[dis'tɪŋkt]	adj.	明显的，清楚的；有区别的；确切的
3. combustion	[kəm'bəʊstʃən]	n.	燃烧，烧毁；氧化
4. emission	[ɪ'mɪʃən]	n.	排放，辐射；排放物，散发物（尤指气体）
5. peak power	[pi:k'paʊə]		峰值功率
6. rather than	['rɑ:ðə ðæn]		(要).....而不.....,与其.....倒不如
7. reuse	[ri:'ju:z]	vt.	再使用
		n.	再使用
8. recapture	[ri:'kæptʃə]	vt.	重新捕获
9. stop-and-go			时停时进
10. brake	[breɪk]	n.	制动器，闸；刹车；阻碍
		vt. & vi.	刹（车）
11. kinetic	[kɪ'netɪk]	adj.	能动的，有力的；[物]动力（学）的，运动的
12. regenerative	[rɪ,dʒenə'reɪtɪv]	adj.	再生的；回热的
13. generator	['dʒenəreɪtə]	n.	发电机，发生器
14. coasting	['kəʊstɪŋ]	adj.	惯性的
15. idle	['aɪdl]	adj.	无意义的；空闲的；懒惰的

Chapter 5

Automobile Repair and Maintenance (汽车保养与维修)

Lesson 19: Maintenance and Repair (保养与维修)

Section one: Regular maintenance of an auto

Task1: See and match. Look at the following pictures and recognize what they are in English and then make a match.



Fig. 1



Fig. 2



Fig. 3



Fig. 4

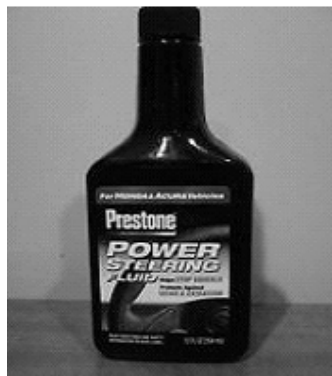


Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10

Tires Spark Plugs Brakes-Pads/Fluid Power Steering Fluid
Fuel Battery Air Filter Belt Engine Oils Fuel Filter

Task 2: Talking and practice. Look at the following four pictures. For each picture you will see three statements. Choose the statement that best describes what you see in the picture.



A



B



C



D

- A
1. The worker is maintaining the light.
 2. The worker is checking the engine.
 3. The worker is maintaining the spark plug.
- B
1. The sky is cloudy.
 2. The car is firing.
 3. There maybe something wrong with the fuel filter.
- C
1. They are checking the tire, if the tires are uneven tread wear.
 2. They are very happy.
 3. They want to have the car washed.
- D
1. He is cleaning the car.
 2. The auto mechanic is checking the car battery condition.
 3. There is something wrong with the tires.

Section two: Reply for customers' complain

Dialogue A: Why does a car engine overheat?

(In a 4S auto shop)

A: Hi! What can I do for you, lady?

B: There maybe something wrong with my engine, it's overheating.

A: Let me check it.

B: Fine.

A: Yeah! It's still overheating. Where have you gone? Here's some sand.

B: We've just come back. We went to a holiday village this morning. We have just run on a long sand road. Bad travel!

A: Oh, I see.

B: So what do you think it is?

A: You see you have sucked up some sand and possibly ruined your water pump impeller. Not only you will have to rebuild your water pump but you might have to backflush the cooling system to remove the sand.

B: It sounds like very serious. No choice, have it repaired please.

A: Ok, we'll diagnose it carefully then do it as soon as quickly.

B: Thank you.

A: Oh, remember if your engine is overheating next time, turn it off first and do not

run it until you have fixed the problem.

B: Thanks a lot.

Comprehension questions:

What caused the problem here?

_____.

What could the worker suggest to repair acc. to the dialogue?

_____.

How does the customer feel for his travel?

_____.

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

wrong	burnt	maintenance	prevent	flies	example
care	sorry	designed	like	pay	have

Mary: Tom, have you watched CCTV news last night?

Tom: What's new?

Mary: A bus 1 itself on an expressway when it was running. More than 10 people died in the fire accident.

Tom: It's too terrible. I'm 2 to hear that. What reason?

Mary: It was reported the bus had run a long way for a long time, there were something 3 with the tires. Indeed, It was a tire that burnt itself, then caused a fire.

Tom: Oh, it is regretful. Drivers should 4 more attention to vehicles maintenance. For example, have your tire pressure checked at least once a month. It's the best way to 5 unexpected flats.

Mary: I think so. Fall is already here and in a short time, winter will be upon us. As we gear up for the colder temperatures, now is a good time to take preventive measures to 6 for our vehicles.

Tom: Yeah! Besides tires, we ought to check our brakes and battery. A thorough check of our vehicle's major systems is a good idea before the snow 7 .

Mary: I agree too. I should learn more about vehicle 8. What about you on this aspect?

Tom: Sometimes I learn it on internet.

Mary: Internet, really?

Tom: Certainly. Internet provides wealth of information on car maintenance. For 9, if your car cranks slowly when you try to start it, has trouble starting in cold weather, or if your headlights dim when the car is idling, 10 that battery checked. And if you're buying tires, all season radials are 11 to handle dry and wet surfaces as well as some snow, while performance tires provide more grip and a sportier feel.

Mary: Oh, My God! You even look 12 an expert.

Tom: Ha, you can know more about it on internet if you put some time on car maintenance.

Mary: Ok! Good idea.

Task 3: Practice

Practice dialogues according to the situations provided with your partner.

1. Miss Li is 4s' customer, she is complaining unexpected tire flats to an auto mechanic.

2. Liming is Jean's friend, he is telling her how to learn something about auto maintenance.

Reading material: How to become an auto mechanic

Auto mechanics are required to possess a diverse range of skills and possess experience to qualify for employment. Entry level auto mechanics face high competition for jobs and as a result, most employers prefer to hire candidates who have work experience and who have completed an apprenticeship or who have been formally trained within high school or vocational automotive service technology programs.

High school students interest in establishing careers as an automotive mechanic may prepare by participating in courses like: physics, chemistry, English, computers, and mathematics. Some high schools also offer students the ability to complete studies within automotive repair programs through trade or technical school programs. Most high school graduates advance to apprenticeship programs or continue studies within certificate programs, community college programs, or training programs offered by automo-

mobile manufacturers or franchised dealerships. Students who enter trade or vocational school programs generally complete studies within six months and gain required knowledge and experience through the combination of hands on practice and classroom instruction. Some community colleges offer one year certificate programs or two year associate degree programs in automotive repair. Most offer courses including: basic mathematics, English, computers, customer service, and business related course. Most training programs sponsored by automobile manufactures and dealerships allow students to work full time while attending classes to gain on the job training in addition to learning classroom theories and techniques.

Apprenticeship programs offer students the ability to begin employment within entry level automotive jobs as trainee technicians, lubrication workers, or technician's helpers. Individuals within apprenticeships generally develop skills working closely with highly trained mechanics and technicians. Individuals begin with simple repair or service duties and advance to more complex work as they develop skills. Apprenticeship programs generally require two to five years of on the job training before individuals advance to journey level, fully qualified automotive mechanic positions.

Associate degree programs in automotive technology offer students interested in careers as automotive mechanics an expanded understanding of the field as well as the technical skills required to advance to positions within various organizations. Automotive mechanics may advance to bachelor degree programs in automotive technology management to increase knowledge and skills.

All above programs make automotive mechanics meet the demands of increasingly sophisticated, high level technology to source mechanical or electrical problems.

New Words:

1. diverse	[di'və:s]	adj.	各种各样的
2. entry	['entri]	n.	入场许可
3. candidate	['kædideit]	n.	候选人
4. apprentice	[ə'prentis]	n.	学徒, 新手
5. vocational	[vəu'keiʃnl]	a.	职业的
6. advance	[əd'vans]	vi.	提升, 晋升, 向前

7. community	[kə'mju:niti]	n.	社区
8. franchise	['frætʃaiz]	v.	给(某人)特许
9. trade	[treid]	n.	贸易
10. sponsor	['spɒnsə]	vt.	提倡, 主办, 发起
11. trainee	[trei'ni:]	n.	实习生
12. lubrication	[lu:bri'keiʃən]	n.	润滑

Notes:

1. Auto mechanics are required to possess a diverse range of skills and possess experience to qualify for employment.

汽车修理工需要拥有多种技能和经验才有资格就业。

possess(v.) 拥有

例句: He possesses a big house facing to sea.

他拥有一所面向大海的大房子。

are required 为被动语态, 用法: be+v. -ed(过去分词)

例句: He was required to finish his home work before 12 o'clock that day.

a range of 在.....的范围内

qualify for 对.....有资格

例句: Miss Li qualifies for the position of the chairman of the trade union.

李女士有资格坐在工会主席的位置。

2. Most employers prefer to hire candidates who have work experience and who have completed an apprenticeship or who have been formally trained within high school or vocational automotive service technology programs.

大多数雇主更愿意雇佣那些有工作经验的人, 或是实习结束以后, 亦或是在高中或是职业学校接受过汽车服务和技术培训课程的人。

prefer to +n. or v. 更, 宁愿

例句: Comparing with football, I prefer to basketball.

与足球相比, 我更喜欢篮球。

Mary likes to play piano, but I prefer to play guitar.

玛丽喜欢弹钢琴, 可我更喜欢弹吉他。

who... 为定语从句, 修饰先行词 candidates

3. Some high schools also offer students the ability to complete studies within au-

tomotive repair programs through trade or technical school programs.

有些高中也通过给学生提供学习技术学校的贸易及技术课程的机会培养学生学习汽车修理的能力。

offer sb. sth. 给某人提供某物

例句 :The government has offered the earthquake area amounts of food and clothes.
政府给地震灾区提供了大量的食物和衣服。

4. All above programs make automotive mechanics meet the demands of increasingly sophisticated, high level technology to source mechanical or electrical problems.

以上的课程的学习能够使得汽修工适应日益复杂的、高水平的技术要求以解决一些机械或电气方面的问题。

meet the demands of 适应.....的要求

例句 :What we are learning meets the demands of economic development in the 21st century.

我们学习的东西是适应 21 世纪经济发展的要求的。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Auto mechanics are not required to possess a diverse range of skills and possess experience to qualify for employment. ()

2. No high school graduates advance to apprenticeship programs. ()

3. Individuals within apprenticeships generally develop skills working closely with highly trained mechanics. ()

4. Automotive mechanics have no chance to advance to bachelor degree programs in automotive technology management. ()

5. Apprenticeship programs generally require two to three years of on the job training before individuals advance to journey level. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the words given:

systems	requires	skills	tqualify	technology
as	tools	mechanic	problems	demands

As automobile technologies have become increasingly complex, training to 1
as an automotive mechanic 2 a substantial time investment, sound hand/eye coor-

dination, and a number of technical 3 to utilize manuals, computerized machines, and power tools. The work of an automobile 4 has evolved to meet the 5 of increasingly sophisticated, high level 6 based vehicles in comparison to the simple mechanical repairs of the past. Most automobiles operate with integrated electronic 7 and increasingly complex computer systems. 8 a result, automobile mechanics have increasingly difficult tasks of working with computerized repair or diagnostic equipment, digital reference materials, digital manuals, and other electronic components as well as the hand and power 9 necessary to complete simple repairs. Most automotive mechanics are required to source mechanical or electrical 10.

Task 3: Translate the following sentences into Chinese.

High school students interested in establishing careers as an automotive mechanic may prepare by participating in courses like.

有志于从事汽修行业的高中学生要做好准备学习以下课程。

Most high school graduates advance to apprenticeship programs or continue studies within certificate programs, community college programs, or training programs offered by automobile manufacturers or franchised dealerships.

大多数高中毕业生提升自己是通过完成实习课程、继续学习取得资格证书、在社区大学学习或接受汽车制造厂或汽车特许经销商提供的培训。

Most training programs sponsored by automobile manufacturers and dealerships allow students to work full time.

大多数汽车制造厂或汽车特许经销商主办的培训课使得学生们专职上班。

Apprenticeship programs offer students the ability to begin employment within entry level automotive jobs as trainee technicians, lubrication workers, or technician's helpers.

学徒课程教授学生的是作为实习技工、润滑工或技工助理初入汽车行业开始就业的能力。

Associate degree programs in automotive technology offer students interested in careers as automotive mechanics an expanded understanding of the field as well as the technical skills required to advance to positions within various organizations.

汽车技术相关学历课程向有志于成为汽车机修工的学生提供了对这个领域及晋身到各个部门所要求的技术技巧方面有更为广阔的了解。

Lesson 20: Automobile Testing Instrument (车辆检测仪)

Section one: Testing instruments

Task 1. Talking and practice. Look at the following four pictures. For each picture you will see three statements. Choose the statement that best describes what you see in the picture.



- A. 1. The man is so thirsty.
2. The man wants to have his car washed.
3. The car is leaking oil.
- B. 1. There is something wrong with the lights of the car.
2. The man is caught in traffic jam.
3. There is something wrong with the steering wheel.
- C. 1. The car exhales thick smoke into the air.
2. The man wants to burrow himself into the car.
3. The man tries to pinpoint the malfunctions of the car which smells strange.
- D. 1. Jack and Mike want to sell the car.

2. It is difficult to start the car.

3. Jack and Mike are dancing.

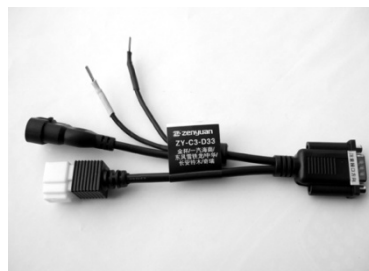
Task2. See and match. Look at the following pictures and recognize what they are in English and then make a match.



1



2



3



4



5



6

A. engine performances analyzer

B. oxygen sensor

C. auto oesilloscop

D. test cable

E. auto multi-meter

F. auto faults decoder

Section two: How can you pinpoint the malfunctions?

Dialogue A

A: Welcome to Huanyu garage. What can I do for you?

B: My car won't start! Stupid old car!

A: Hold on, let's go through some possible problems before you kick your car.

B: Fine.

A: Okay, first of all, could you turn the key in the ignition?

B: Yeah! I am here with my friend and she thinks it may be the spark plug or the starter motor.

A: Those are possible problems, but tell me, do you hear the starter motor crank when you turn the key?

B: Yeah, it sounds like it usually does when I start the car, but nothing else happens. The engine won't start. Should I maybe press the accelerator?

A: No. If you step on the accelerator pedal you can flood the carburetor and your car will never start.

B: So what do you think it is?

A: I know this may seem like a silly question, but does your car have gasoline?

B: Umm. yeah! Right! I got the car started! Thanks for your help!

Comprehensive questions:

1. What are the possible reasons that can not make his car started in his friends' opinion?

2. Why did the worker ask the customer not to press the accelerator?

3. What is the real problem of the car?

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

Emergency	seems to	crank up	dead	charge	condition
-----------	----------	----------	------	--------	-----------

D: Hi, Henry. May I help you?

H: Oh, I'm sorry to bother you, but my car won't start, I don't know why, it just won't 1. Can you help me?

D: Ah, well, let's take a look, shall we? Let me give it a try. But, when was the last time you got your car checked?

H: About one month ago. I was told that my car was in good 2.

(A few minutes later)

D: Aha, I found the problem. It 3 be the battery. You actually have a 4 battery. This sounds fine now. You let the car drive around a little bit and it'll 5 the battery up.

H: Okay. Thank you so much for your help. Here, let me give you this for your trouble.

D: No, no. what are neighbors for if not to help out in an 6?

Task 3: Practice

Practice dialogues with your partner according to the situations provided.

1. Joe is a teacher of a vocational school and he is now explaining the use of automotive scan tools.

2. The engine of Tony's new car fails to start. He is complaining this to a customer service staff.

Reading material

Automotive digital multimeter

A Digital Multimeter is one of the most important diagnostic tools that you'll need to troubleshoot and diagnose any of the many electrical and electronic components in your car. There are two basic types of multimeters, digital and analog. Analog multimeters have a needle and the digital has a LCD or a LED display. With today's vehicles it makes more sense to have a DMM but a analog multimeter still has its uses.

In the old days a meter was used mostly to check batteries and dwell angles. A mechanic might have gone days without taking his multimeter out. Today that has changed. Today a good multimeter is an essential part of a mechanics toolbox.

All DMMs will test for voltage, current and resistance. These are the three functions you will use most when trying to diagnose a problem. When you purchase a DMM, one of the most important things to look at is the meter's impedance, which is the meter's operating resistance. Most DMMs have very high impedance. Since the meter is part of the circuit being tested, its resistance will affect the current flow through that circuit.

Typical Amperage Test

If a DMM has a very high impedance or resistance it will cause a slight increase in the circuit's current. This becomes a concern when you test electronic systems because the increased current draw can damage the components being tested or, at the very least, alter the readings or change a sensor signal. You want to get a meter that has an impedance of at least 10 megaohms. That is to say their current draw is so low it becomes invisible.

Before you use your DMM to perform a test, you need to know what you are testing and what kind of results you are looking for. If you are looking for volts, you will need to select the proper range for the test. If you are looking for a 12-volt result, select a meter range higher than 12 volts. For example, a 0 to 25 volt range would be best. A range of 0 to 500 volt will not yield an accurate result.

Almost all DMMs have an “auto-range” features that will automatically select the proper range. Some DMMs will let you over ride this feature and let you manually select the range you want. Some DMMs do not have this option and must be set manually. Check the documentation that came with your DMM and make sure you know and understand the different ranges it is capable of.

Most DMMs that have an auto-range will have the setting either before or after the reading. Ohms are measured in multiples of ten and given the designation ‘K’ or ‘M’ with ‘K’ standing for 1,000 ohms and ‘M’ standing for 100,000,000 ohms. Amps would be displayed as MA, milliamps or 1/1000 of an amp. Volts will also be displayed as MV or volts. When you take a reading with a DMM that has auto-range, be sure you note at what range the meter is on. You could mistake 10 MA as 10 amps.

New Words:

- | | | | |
|-----------------|-----------------|------|-----------------|
| 1. diagnostic | [ˌdaɪəɡ'nɒstɪk] | adj. | 诊断的；特征的 |
| | | n. | 诊断法；诊断结论 |
| 2. troubleshoot | ['trʌblʃu:t] | vt. | 寻找故障；故障排解 |
| | | vi. | 充当故障检修员 |
| 3. analog | ['ænəlɒɡ] | n. | 模拟；类似物 |
| | | adj. | 模拟的；有长短针的 |
| 4. resistance | [rɪ'zɪstəns] | n. | 阻力；电阻；抵抗；反抗；抵抗力 |
| 5. impedance | [ɪm'pi:dəns] | n. | [电]阻抗 |
| 6. display | [ˌdɪs'pleɪ] | n. | 显示；炫耀 |
| | | vt. | 显示；表现；陈列 |
| | | vi. | 作炫耀 |
| | | adj. | 展览的；陈列用的 |

Notes:

1. make more sense 更有意义

So it can often make a lot more sense if we think about things in terms of energy.
通常我们从能量的角度来，考虑就能更好的理解这点。

2. dwell angle 闭合角

design of car ignition dwell angle controlling circuit
汽车点火闭合角控制电路设计。

test instrument of automobile dwell angle based on 89C52
基于 89C52 的汽车闭合角测试仪的研制。

3. invisible 不可见的

The mass of China lay before us, all-pervasive but invisible.
中国的大地伸展在我们面前，无边无际，但又模糊不可见。

4. yield V. 生产，屈服 n. 产量

“Never yield, never submit; Wipe off tears and insist; Deserved suffering, I accept;
My road, I see straight.”

“不低头，不认输，擦干眼泪，坚持住，该受的苦，我来受，我的路我清楚。”

Because of a long drought, the farmers are doubtful about the prospect of a good
yield.

因为长时间的干旱，农民们对于好收成的前景是怀疑的。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. An analog multimeter is out of date and today it is not used at all. ()

2. Testing for voltage, current and resistance are the three functions you will use most when trying to diagnose a problem. ()

3. If a DMM has a very low impedance or resistance it will cause a slight increase in the circuit's current. ()

4. If you are looking for a 12-volt result, a 0 to 25 volt range would be best. ()

5. Most DMMs that have an auto-range will have the setting just after the reading. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

There are two basic types of multimeters, 1 and 2. A Digital Multimeter is one of the most important diagnostic tools that you'll need to 3 and 4 any of the many electrical and electronic 5 in your car. Testing for 6, current and resistance are the three functions you will use most when trying to diagnose a 7. When you purchase a DMM, one of the most important things to look at is the meter's impedance, because the meter is part of the 8 being tested so that its resistance will affect the 9 through that circuit. Before you use your DMM to perform a test, you need to know what you are testing and what kind of results you are looking for, which help you to select the proper range for the test. Almost all DMMs have an "auto-range" feature that will 10 select the proper range. Most DMMs that have an auto-range will have the setting either before or after the reading.

Lesson 21: Reading Materials of Present Automobile Technology

(现代汽车技术阅读材料)

Section one: Translate the following terms into Chinese

Task 1: Read the following sentences and translate the underlined words to Chinese. Try to describe them in your own words according to your automobile knowledge.

Airbags have saved thousands of lives since their introduction in the early 1980s.

An airbag inflation device includes igniter, nitrogen gas, filters and sodium azide.

Antilock brake system and anti-spin regulation systems are used to control the braking wheel attempts to go into a locked condition or a drive wheel attempts to spin and lose traction.

Many rear-wheel-drive and four-wheel-drive vehicles are equipped with automatic transmission.

Early exhaust analyzers measured the amount of hydrocarbons and carbon monoxides. Nearly all vehicles on the road have electronic engine control systems.

Task 2: Read and match. Read the expressions about automobile technologies and then make a match. Try to point out some important automobile technologies in English.

A. four-gas exhaust analyzers	() 1. 尾气控制系统
B. exhaust gas recirculation	() 2. 电控传感器
C. emission control system	() 3. 驱动防滑系统
D. acceleration slip regulation	() 4. 四气分析仪
E. anti-lock brake system	() 5. 全球定位系统
F. electronic spark timing	() 6. 废气再循环
G. global positioning system	() 7. 发光二极管
H. automatic transmission	() 8. 自动变速器
I. light emitting diode	() 9. 点火正时
J. electronic sensors	() 10. 防抱死刹车系统

Section two: Introduction to the emission control system

Dialogue A

W: Hi, Tony, what's the matter with you? You look upset.

T: Oh, Mr. Wang, I missed last class and I'm still not clear about the emission control system.

W: Well, take it easy. I can't put it clearly with one or two words, but you can read the text patiently and have a preliminary knowledge about the problem gases.

T: I know some of the problem gases are hydrocarbons, carbon monoxide, carbon dioxide, nitrogen oxides, sulfur dioxide, phosphorus, lead and other metals. The emission control system is to control the emissions and exhaust from your vehicle.

W: You put a lot of effort after class. Emission controls reduce the emission of carbon monoxide and hydrocarbons. Do you get to the devices related to the emission control system installed on the automobile?

T: Er, I'm sorry and I just know the exhaust pipe and catalytic converter.

W: Besides, there are muffler, tailpipe, EGR valve, PCV valve, air pump, canister, and so on. These devices are of great importance for you to understand the principle of its operation.

T: Thank you very much, Mr. Wang. I still need to make more efforts.

Comprehending questions:

What are some of the problem gases?

_____.

What do you know about the devices related to the emission control system installed on the automobile?

_____.

What is the purpose of installing emission control devices?

_____.

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

Excellentlly	minor	inconvenience	reliable	clients
--------------	-------	---------------	----------	---------

S: Hello, this is Da Zhengren Automobile Company. I'm calling to know whether everything has gone well with your emission control system.

C: Thanks a lot. It works 1 after being cleaned.

S: I'm very happy to hear you say so and I do hope the 2 problem didn't cause you much 3 .

C: Thank you very much for good service. I'm sure your company will be making more money.

S: It is always our policy to give 4 and satisfactory services to our 5 . So, welcome to our company and have a tune up at your convenience.

C: Ok, bye-by.

S: See you later.

Reading material:

ITS and GPS

ITS

ITS or "intelligent Transportation Systems" is a broad range of diverse technologies. ITS can be applied to vast transportation infrastructure of highways, streets, and bridges, as well as to a growing number of vehicles, including cars, buses, trucks, and trains.

Simply, ITS refers to the integrated application of modern technologies and man-

agement strategies in our surface transportation systems. To put it more concretely, ITS includes many different technical equipment: traffic signals that are centrally controlled by computer; electronic toll collection tags that enable drivers to pay without stopping at toll booths; changeable message signs that provide information concerning the next bus or train or about rough traffic conditions ahead; talking navigation systems that provide turn-by-turn directions through satellite technology for drivers while en-route.

ITS enables people and goods to move more safely and efficiently. Intelligent transportation systems provide the tools for skilled transportation professionals to collect, analyze, and archive data about the performance of the system. Having this data enhances traffic operators' ability to respond to incidents, adverse weather or other capacity constricting events.

These information and communication technologies can also be used to better management and improve how transportation providers such as governments, transit agencies and truckers offer services to the public. When applied to current transportation systems, they can help improve safety, reduce congestion, enhance mobility, minimize environmental impacts, save energy, and promote economic productivity.

The future of ITS is promising. Yet, ITS itself, is anything but futuristic. Already, real systems, products and services are at work throughout the country. Still, the wide-scale development and deployment of these technologies represent a true revolution in the way we, think about transportation.

GPS

Global positioning system is a satellite-based radio navigation system. GPS permits land, sea, and airborne users to determine their three-dimensional position, velocity, and time 24 hours a day, in all weather, anywhere in the world with a precision and accuracy far better than other radio navigation systems available today or on the foreseeable future. GPS consists of three segments: space, control, and user.

The space segment consists of 24 operational satellites in six circular orbits 20,000 km above the earth at an inclination angle of 55 degrees with a 12-hour period. The satellites are spaced in orbit so that at any time a minimum of 4 satellites will be in view to users anywhere in the world. The satellites continuously broadcast position and time data to users throughout the world. There are currently 27 satellites in orbit, or three spaces, which assures the availability of 24 operational satellites.

The control segment consists of a master control station with five monitor stations

and three control up-link stations located throughout the world. Monitor stations track all GPS satellites in view and collect ranging information from the satellite broadcasts. The monitor stations send information they collect from each of the satellites back to the master control station, which computes extremely precise satellite orbits. The information is then formatted into updated navigation messages for each satellite. The updated information is transmitted to each satellite via the control up-link stations, which also transmit and receive satellite control and monitoring signals.

The user segment consists of the receivers, processors, and antennas that allow land, sea, or airborne operators to receive the GPS satellite broadcasts and compute their precise position, velocity and time. The GPS concept of operation is based upon satellite ranging. Users determine their position by measuring their distance from the group of satellites in space. The satellites act as precise reference points. Each GPS satellite transmits an accurate position and time signal. The user's receiver measures the time delay for the signal to reach the receiver, which is the direct measure of the apparent range to the satellite. Measurements collected simultaneously from four satellites are processed to solve for the three dimensions of position (latitude, longitude, and altitude) and time.

GPS is used to support land, sea, and airborne navigation, surveying, geophysical exploration, mapping and geodesy, vehicle location systems, farming, transportation systems, and a wide variety of other additional applications.

New Words:

1. diverse	[dai'və:s,di-]	adj.	不同的；多种多样的； 变化多的
2. infrastructure	['ɪnfə,strʌktʃə]	n.	基础设施；公共建设； 下部构造
3. toll	[təʊl,tɔl]	vt. n. vi.	征收；敲钟 通行费；代价；钟声 鸣钟；征税
4. availability	[ə,veɪlə'bɪləti]	n.	可用性；有效性；实用性
5. congestion	[kən'dʒestʃən]	n.	拥挤；拥塞；充血
6. deployment	[di:'plɔɪmənt]	n.	调度，部署
7. airborne	['eəbɔ:n]	adj.	空运的；空气传播的； 风媒的

8. segment	['seɡmənt,	vi.	分割
	seg'ment,	n.	段；部分
	'segment]	vt.	分割
9. simultaneous	[,siməl'teiniəs]	adj.	同时的；联立的；同时发生的
		n.	同时译员
		[地物]	地球物理勘探
10. geophysical exploration			

Notes:

1. to put it more concretely 更具体的说

However, “the dramatization of life” demonstrates that the drama discourse has penetrated into cultural studies, to put it more concretely, it can be said that it belongs to sociology as well.

而他所说的“生活的戏剧化”则表明戏剧话语向文化研究扩散，更具体地，可以说是社会学研究。

类似的表达: to put it simply

2. congestion 拥挤，堵车

Congestion frequently reduces traffic to walking pace.

交通阻塞经常把车流的速度降低得如步行一般缓慢。

Congestion really is a long-standing problem in Beijing.

交通阻塞的确是北京的老大难。

3. electronic toll collection 电子缴费

4. wide-scale 广泛的

Similar methods are being put into use on a wide scale.

类似的方法正广泛使用。

5. radio navigation system 无线电导航系统

6. inclination angle 倾角

7. geophysical exploration 地球测绘

8. mapping and geodesy 大地测量学

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Intelligent transportation systems provide tools for skilled transportation

professionals to collect, analyze, and archive data about the performance of the system.

()

2. ITS involves the integrated application of modern technologies and management strategies in the subway transportation system.

()

3. GPS permits land, sea, and airborne users to determine their precise position, velocity, and time 24 hours a day, in all weather, anywhere in the world.

()

4. The space segment consists of 27 operational satellites in six circular orbits.

()

5. The user's receiver measures the time for the signal to reach the receiver, which is the direct measure of the apparent range to the satellite.

()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage and then try to retell the passage.

ITS refers to the integrated application of modern 1 and management strategies in our surface transportation systems. It can be applied to our vast 2 infrastructure of highways, streets, and bridges, as well as to a growing number of vehicles, including cars, buses, trucks, and trains. When applied to our current transportation systems, information and communication technologies can help improve safety, 3 congestion, enhance mobility, 4 environmental impacts, save energy, and promote economic productivity. The wide-scale development and deployment of these technologies represent a true 5 in the way we, think about transportation.

Global positioning system is a 6 radio navigation system. GPS consists of three segments: space, 7 and user. The space segment consists of 24 operational satellites in six circular orbits. The satellites are spaced in orbit so that at any time a 8 of 4 satellites will be in view to users anywhere in the world. The control segment consists of a master control station with five 9 stations and three control up-link stations located throughout the world. Monitor stations track all GPS satellites in view and collect ranging information from the satellite broadcasts. The user segment consists of the receivers, processors, and antennas that allow land, sea, or airborne operators to receive the GPS satellite broadcasts and compute their precise position, 10 and time.

Chapter 6

Automotive Culture (汽车文化)

Lesson22: Automotive Movies (汽车电影)

Section one: The relationship between auto and movies

Task 1: Translate and Practice

Look at the following four pictures. Each picture refers to each movie, please write the names of these films.



Task 2: Read and match. Read the devices of auto and make a match. Try to point out some facilities for the auto in English.

A. radiator grille	() 1. 水箱
B. wing mirror	() 2. 保险杠
C. bumper	() 3. 后视镜
D. front blinker	() 4. 前信号灯
E. backup light	() 5. 刹车灯
F. stoplight	() 6. 一档
G. bumper	() 7. 倒车灯
H. first gear	() 8. 柴油机
I. reverse	() 9. 倒车挡
J. Diesel	() 10. 保险杠

Section two: Which automobile movies do you like?

Dialogue A

Tom: Hi, how is everything going?

Peter: Very well, thank you.

Tom: So where are you heading for?

Peter: Oh, I want to go to cinema. Both Nancy and I want to see Speed5.

Tom: Speed 5, I like that too. I like Porsche in the movie.

Peter: Me too, Speed series always have Porsche in the movie.

Tom: Yeah, Porsche is the most successful brand in the world.

Peter: Recently Porsche museum just hold its 60th Anniversary Exhibition.

Tom: I also heard about that news. There are vehicle exhibits and many very rare photographs.

Peter: You bet. The museum is open Tuesday to Sunday from 9 a. m to 6 p. m.

Tom: Great, is it free?

Peter: Well, no.

Tom: And how much?

Peter: Admission is eight euro from adults and four euro for concessions.

Tom: Good. Maybe we can go there some day.

Peter: Right, but now, how about going to the movie with us?

Tom: Ok, why not? Let's go!

Comprehending questions:

1. What are Peter and Nancy going to do?

_____.

2. What does Tom like in the film Speed5?

_____.

3. What time does Porsche museum open?

_____.

4. Is it free in Porsche museum?

_____.

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

crowded	cheaper	same	somewhat	filmdom
---------	---------	------	----------	---------

Tom: Hi, what are you doing?

Bob: Nothing special, just watching the movie in the theater.

Tom: The movie theater is always so 1 on the weekends. I like to go to the movies during the week.

Bob: That's true. And sometimes the tickets are 2 during the week as well.

Tom: Yes, What movie are you watching now?

Bob: The Speed. Have you seen that?

Tom: Yeah, The movie Speed is the most exciting film I've ever seen.

Bob: I feel the 3 way.

Tom: In this movie, I like Jack, he is a resourceful man.

Bob: Anyway, Dennis Hopper's character is 4 complex and his performance is excellent.

Tom: I heard he started in 5 when he was 19 years old.

Bob: Yes, he is a good actor.

Task: 3 Practice dialogues with your partner according to the situations provided.

1. Nancy and Mary are meeting in the cinema, they see a film car, and talk about it.

2. Emily is an actress in the film *Speed*; some reporters interview her about this film.

Reading material:

Film clips of *Speed*

Speed is a 1994 American action film directed by Jan de Bont, starring Keanu Reeves, Sandra Bullock, Dennis Hopper, Joe Morton and Jeff Daniels. *Speed* was a runaway success in 1994. It was a block-buster in every sense of the word and critically speaking, it is an excellent motion picture. A high concept film about a bomb on a bus, it is considered Bullock's breakout role. It grossed \$121,248,145 in the U. S. and \$350,448,145 worldwide. In 1995 *Speed* won an Academy Award for Best Sound and Best Sound Effects. The film was also nominated for the Academy Award for Best Film Editing.

Synopsis of the film: Jack Traven and his partner Harry Temple are SWAT team explosives experts in Los Angeles. They're called in to free a group of office workers from an elevator that's trapped between floors in a downtown high-rise. Howard Payne, an explosives expert who used to be with the Atlanta, Georgia bomb squad, has promised that they'll all be blown to bits unless he's paid off. Traven and Temple rescue the hostages, but Payne escapes. Later, in one morning, Traven witnesses a city bus explode, killing the bus driver (Traven's friend). Traven picks up a nearby ringing pay phone, only to hear Payne warn that another bus, filled with innocent commuters, has been wired with a bomb. When the bus reaches the speed of 50 miles per hour, the bomb becomes armed, and if the bus drops below 50 after that—or if any passengers are taken off the bus, or if the ransom isn't delivered at the appointed time—the bomb will explode. One passenger, a thug fearing arrest, pulls a gun and accidentally wounds the driver, so passenger Annie Porter has to take the wheel while Traven makes radio contact with headquarters and plans a rescue. Annie is perfect for the job too, because she is currently without her license because of a speeding ticket. The bus must be kept moving faster than 50 MPH, so it's given a police escort that clears the way until it can be rerouted onto an airport landing strip. Then Traven, Temple, and Payne begin a deadly game of cat and mouse.

New words:

1. gross [grəʊs] vt. 总共收入

2. nominate	['nɒmineɪt]	vt.	(为某奖项)提名(演员、影片等)
3. witness	['wɪtnɪs]	vt.	出席或知道;作记录;提供或作为.....的证据
4. innocent	['ɪnəsnt]	adj.	无辜的,无罪的;清白的;天真无邪的;无知的
5. series	['siəri:z]	n.	系列,连续;串联;(广播或电视题材或角色相同的)系列节目;级数
6. admission	[əd'mɪʃən]	n.	准许进入;承认;坦白;入场费
7. resourceful	[ri'sɔ:sfl]	adj.	资源丰富的,富于机智的,有策略的;灵活多样,善于随机应变
8. somewhat	['sʌmwɒt]	adv.	稍微;有点;达到某种程度
		n.	少量;某些数量;某种程度
9. filmdom	['fɪlmdəm]	n.	电影界,电影业;影坛
10. concept	['kɒnsept]	n.	观念,概念;观点;思想,设想,想法;总的印象
11. breakout	['breɪkaʊt]	n.	脱逃,越狱,突围
12. elevator	['elɪveɪtə]	n.	电梯;升降机(美);谷仓
13. trap	[træp]	vt.	诱骗;使受限制;困住;使(水与气体等)分离
		n.	圈套;(对付人的)计谋;抛靶器;(捕捉动物的)夹子
		vi.	设陷阱;装捕捉机;设圈套
14. high-rise	[haɪ raɪz]	adj.	有多层的,高楼的;超高层的
		n.	高楼,大厦,多层建筑物
15. squad	[skwɒd]	n.	(军队中的)班;(暗杀)小组;体育运动(代表)队;警察队伍
16. alert	[ə'lɜ:t]	vt.	向...报警
17. ransom	['rænsəm]	n.	付赎金救人,赎金
18. currently	['kʌrəntli]	adv.	当前;通常;容易,流畅;普遍地
19. escort	['eskɔ:t]	n.	护送者;护航舰;
20. thug	[θʌg]	n.	暴徒,恶棍,凶手;刺客
21. strip	[stri:p]	n.	长条,条板;带状地带(或森林、湖面等);(足球队员的)运动服

22. disarm [dis'a:m] vt. 使缴械；使息怒；解除武装；缓和

Notes:

1. direct: vt. & vi. 指导，导演，管理

He directed various TV shows.

他执导过多种题材的电视节目。

The film was directed by Howard Hawks.

该影片是由霍华德·霍克斯导演的。

2. High concept film: 高概念电影。是指营销指导创意的电影生产方式及后续的市场运作。“高概念”是最具市场导向性、高度商业化的电影类别，是生产制作和市场运作的全过程都追求最大化可营销性的影片。

3. picks up: 短语动词，拿起；提起；拾起；捡起。

He picked his cap up from the floor and stuck it back on his head.

他从地板上拾起帽子，重新戴在头上。

Ridley picked up a pencil and fiddled with it.

里德利拿起一支铅笔，不停地在手里摆弄着。

4. reaches the speed of 50 miles per hour.

达到每小时 50 英里。

figure out: 解决；弄明白。

I can't figure out what he was hinting at.

我想不出他在暗示什么。

an airport landing strip: 机场跑道。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Speed is a 1995 American action film directed by Jan de Bont, starring Keanu Reeves. ()

2. Traven and his partner Temple are SWAT team explosives experts in Los Angeles. ()

3. Payne and Temple rescue the hostages, but Traven escapes. ()

4. When the bus kept moving faster than 50 miles per hour, the bomb becomes armed. ()

5. One passenger, a thug fearing arrest, pulls a gun and accidentally wounds the driver. ()

6. The bus must be kept moving lower than 50 MPH, so it's given a police escort that clears the way until it can be rerouted onto an airport landing strip. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

The great thing about “Speed” is the fact that it never tries to be more than it is. It goes for 1 action, thrills, chills, and spills. Payne is a retired cop who killed the patrol and put a bomb in the elevator, charging one million dollars for 13 hostages. Jack and Harry 2 the bombs, bravely and save the hostages. But Payne escaped from it, and begins to revenge. He firstly 3 a bus and tells Jack that he has put a bomb in another bus. Once the bus goes 50 miles an hour, the bomb is armed. If it drops below 50, it blows up. Jack catches up with the bus and tries to get on it, the driver Sam is 4 , one passenger Annie act as the temporary driver. She and Jack 5 plenty of dangers and begin to fight with Payne. She is a brave girl.

Lesson23: Automotive Advertisements (汽车广告)

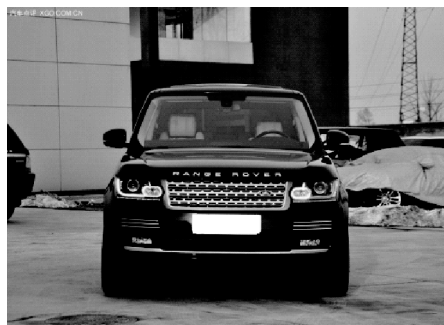
Section one: Innovative idea about automobile advertisements

Task 1: Talking and match

Look at the following four pictures. For each picture you will take one innovative idea about automobile ads. Choose the innovative idea that best describes what you see in the picture. And make a match.



Picture 1



Picture 2



Picture 3



Picture 4

A: At the height of his career, everyone seeks to distance himself from the work that made him successful. Because a man's success is measured by what he does at play. The Range Rover.

B: At Fauxall we believe there is no point in building a luxury car, if it's out of people's reach. We believe the challenge is to build a car with the safety; quality is a right, not a privilege.

C: When I see my baby, what do I see: poetry in motion, walking by my side; all day long in motion, keeps my eyes open wide; dancing close to me. . . Look out for the new Corolla. Toyota.

D: You walked into the party, like you were walking onto a yacht. You had one eye in the mirror as you watched yourself go, Bart. And all the girls dreamed that they'd be your partner, you're Mercedes Benz.

Task 2: Judge and translate. Look at some car logos and translate them into Chinese.



Section two: Design some attractive automobile ads

Dialogue A

Tanya: Good morning, Carla. How are you today?

Carla: I'm doing fine. How about you?

Tanya: Great, thanks. So, what's the status of our advertising campaign?

Carla: As I mentioned before, a national campaign started last month. All of people who have seen the ads thought it perfect.

Tanya: What is it?

Carla: The scene is the man drove a car, he couldn't come across here until we built a bridge. Everybody called it a work of art. Maybe art is technology. Building roads you wouldn't think possible. Creating cars you couldn't imagine. The Opel Electra-art in motion.

Tanya: Sounds like an ideal advertisements.

Carla: Definitely. Thank you.

Comprehending questions:

What's the status of our advertising campaign?

How do all of them feel the ads?

What scene of the ads is it?

Dialogue B

Read and practice. Read the dialogues, fill in the missing information, and practice them with your partner.

competitive	impressed	fabulous	ideas	All in all
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A: Hi, Mike! Have you seen the famous advertisement for Volvo?

B: Which one? There are many good advertisement 1 for it.

A: There's more to life than a Volvo. There's a freedom to change your mind, and to change it back again. There's more to life than a Volvo, that's why you drive on.

B: Yes, I am great exciting with this idea, what 2 advertisements.

A: I am deeply 3. Now I drive the car everyday.

B: 4, a good idea is the key; many big companies have their exciting advertisements.

A: Yes, I think so.

B: So it is a 5 trade.

Task 3: Practice

Practice dialogues according to the situations provided with your partner.

1. Nancy and Mary are meeting in the company. They are talking about how to make a perfect advertisement.

2. Jack is watching an advertisement for Infiniti-ca. He is very exciting about it and talks it with his mother.

Reading material: The effective discourse in automotive advertisements

Advertising is any paid form of nonperson presentation and promotion of ideas, goods, or services by an identified sponsor. Advertisements can be a cost-effective way to disseminate messages, whether to build a brand preference or to educate people. It is perhaps one of the most important tools a dealer can use to promote his or her business, be it sales, service, parts, body shop, or other related products and services.

Advertisements appear everywhere in modern society. When you walk along the streets, you can see large billboards with beautiful girls smiling at you. You read newspapers, and you find half of the pages covered with advertisements. Turn on the TV set and you will see advertisements again. Whether you like it or not advertisements are pouring into your life every moment.

These days' advertisers devise hundreds of competitions which will enable us to win huge sums of money. They not only offer samples, but free cars, free houses, and free trip abroad as well. They have discovered that all of us love to get something for nothing. Radio and television have made it possible for advertisers to capture the attention of millions of people in this way.

But not all advertisements are trustworthy. Certain advertised products turn out to be deceitful, or fail to live up to what is advertised. Some advertisements tempt consumers

to spend money and buy things they don't really need. So the consumers' own sound judgments are necessary and essential.

All automobile advertising by dealers, whether printed or broadcast, should be in plain language, clear and conspicuous non-deceptive. Deception may result from direct statements in the advertisement or from reasonable inferences that may be drawn from an ad, or from disclaimers that contradict, confuse, unreasonably limit or materially modify a principal message of the advertisement. Deception may also result from the failure to clearly and conspicuously disclose any material facts, including limitations, disclaimers, qualifications, conditions, exclusions or restrictions.

Any advertisement for new or used automobiles—including passenger cars, utility vehicles, and light trucks for sale or lease by dealers in New York State must comply with New York General Business Law, which define and prohibit “false advertising”.

In developing an advertising program, marketing managers must always state by identifying the target market and buyer motives. Then they can make five major decisions, known as “the five Ms”:

Mission: what are the advertising objectives?

Money: how much can be spent?

Message: what message should be sent?

Media: what media should be used?

Measurement: how should the results be evaluated?

New words:

1. status	['steɪtəs]	n.	地位；情形，状态；身份
2. motion	['məʊʃn]	n.	运动；手势；动机，意向；请求
3. ideal	[aɪ'di:əl]	adj.	理想的，完美的；被认为是最好的；相当令人满意的；想象的，假设的
4. fabulous	['fæbjələs]	adj.	极好的，极妙的；(美貌)惊人的；寓言般的；难以置信的
5. presentation	[,prezn'teɪʃn]	n.	陈述；报告；介绍；赠送
6. promotion	[prə'məʊʃn]	n.	促进，增进；提升，升级；推广；发扬
7. sponsor	['spɒnsə(r)]	n.	发起者，主办者；担保者；倡

			议者，提案人；后援组织
8. disseminate	[dɪ'semɪneɪt]	vt.	散布，传播
9. preference	['prefrəns]	n.	偏爱；优先权；偏爱的事物（债权人）受优先偿还的权利
10. dealer	['di:lə(r)]	n.	商人；庄家；以某种方式待人的 人；经销商
11. competition	[ˌkɒmpə'tɪʃn]	n.	竞争；比赛；竞争者；
12. billboard	['bɪlbɔ:d]	n.	广告牌；告示牌
13. sample	['sɑ:mpl]	n.	样品，华样；标本，榜样；（化 验的）取样；
14. capture	['kæptʃə(r)]	vt.	俘获；夺取；引起（注意、想像、 兴趣）
15. trustworthy	['trʌstwɜ:ðɪ]	adj.	值得信赖的，可靠的；
16. deceitful	[dɪ'si:tfl]	adj.	不诚实的，骗人的
17. tempt	[tempt]	vt.	引诱，怂恿；吸引；冒...的风险； 使感兴趣
18. plain	[pleɪn]	adj.	平的；素的；清晰的；
19. conspicuous	[kən'spɪkjʊəs]	adj.	显而易见的；惹人注意的
20. disclaimer	[dɪs'kleɪmə(r)]	n.	否认声明；放弃；放弃者
21. contradict	[ˌkɒntrə'dɪkt]	vt.	反驳，否认；与...矛盾，与...抵 触
22. modify	['mɒdɪfaɪ]	vi.	被修饰；修改
		vt.	改变；减轻，减缓；[语]修饰， 改变
23. prohibit	[prə'hɪbɪt]	vt.	禁止，阻止，防止；不准许
24. utility	[ju:'tɪləti]	adj.	有多种用途的；
25. conspicuously	[kən'spɪkjʊəsli]	adv.	显著地，超群地

Notes:

- | | |
|--------------------------|--------|
| 1. an identified sponsor | 明确的经办人 |
| 2. brand preference | 品牌偏好 |
| 3. generate business | 推动业务 |
| 4. false advertising | 虚假广告 |

- | | |
|--------------------|-----------------------|
| 5. target market | 目标市场 |
| 6. mission | 确定目标 |
| 7. money | 预算决策 |
| 8. message | 信息决策 |
| 9. media | 媒体决策 |
| 10. measurement | 评价目标 |
| 11. cost-effective | adj. 有成本效益的, 划算的; 合算的 |

12. The bank must be run in a cost-effective way.

银行的经营必须追求成本效益。

13. pour into 不断地(大量地)流进(涌进); 注入; 灌注; 倾注

Tourists pour into London during the summer months.

在夏季, 游客涌入伦敦。

14. result from 产生于, 由引起

Earth quakes can result from stresses in the earth's crust.

地壳内的压力可能引起地震。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

- Advertising is any paid form of personal presentation and promotion of ideas, goods, or services by an identified sponsor. ()
- Advertisements appear everywhere in modern society. ()
- They not only offer samples, but buying cars, buying houses, and buying trip abroad as well. ()
- Deception may result from the failure to clearly and conspicuously disclose any material facts. ()
- They can make five major decisions, known as "the five Ms": mission, money, message, media, and measurement. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage and then try to retell the passage.

Nowadays, more and more advertisements appear on newspapers, broadcasting, magazines as well as streets. People have different 1 on advertisements. Some people think advertisement guides choices of goods. Consumers can gain not only

knowledge of goods but also artistic enjoyment. 2 those people, many others think advertisements are very unpleasant. The advertisements which will be issued must be 3 by the Industrial and Commercial Bureau. Deception may 4 direct statements in the advertisement; 5 may also result from the failure to clearly and conspicuously disclose any material facts. 6 managers make five major 7 mission, money, message, media, and measurement.

Lesson 24: Automotive Sports (汽车运动)

Section one: Automobile and sports

Task 1: Talking and Practicing

Look at the following four pictures. For the pictures you will read the following four statements. Choose the best statement which matches with each picture.



Picture 1



Picture 2



Picture 3



Picture 4

- A. Photograph of the race circuit for motor racing;
- B. The logo of Federation International Automobile;
- C. A photograph of Ferrari GT;

D. This is the photograph of Schumacher—the greatest racing driver.

Task 2: Read and match. Read the names of auto sport and make a match. Try to point out some special facilities for the auto sport in English.

A. practice	() 1. 维修道
B. rally	() 2. 安全车
C. pit lane	() 3. 减速弯道
D. starting grid	() 4. 练习赛
E. safety car	() 5. 救生室
F. paddock	() 6. 拉力赛
G. chicane	() 7. 装备区
H. pole position	() 8. 发夹弯道
I. hairpin	() 9. 起跑排位
J. surviving cell	() 10. 杆位

Section two: Name some famous automobile sports

Dialogue A

A: What's your plan for this weekend?

B: Oh, I'm going to watch a basketball game in Mastercard center.

A: A basketball game? That sounds exciting.

B: Yes. The NBA champion Miami heat will be there with the Los Angeles clippers to participate in the 2012 NBA China game.

A: That's great!

B: Do you like sports?

A: Yes. But I prefer car racing.

B: I know a little about car racing.

A: Did you hear about F1?

B: Yes. But what does it mean?

A: It is the short form of Formula one World Championship.

B: Who is the greatest racing driver in the world?

A: The first person of F1 is Michael Schumacher. He is a famous German formula one driver, who is referred to as the "king" of F1. Now he is a racer of Ferrari and he has already won about 90 racings and won the final championship 7 times.

B: Does F1 be hold in China?

A: Yes. Shanghai has become a station of F1 since 2004.

B: Oh, I hope to watch F1 someday.

Comprehending questions:

1. What does F1 mean?

2. Who is the first person of F1?

3. Where is Schumacher from?

4. What achievements did Schumacher get?

Dialogue B

Read the dialogues, fill in the missing information with the given words, and practice them with your partner.

in all

How long

the difference between

stands for

oval shaped tracks

individually

Jim: Good afternoon. I love the sport of NASCAR. And I want to know about this season's Sprint Cup.

Host: NASCAR 1 the National Association of Stock Car Auto Racing in the United States. Its headquarters are in Daytona, Florida. Experts say NASCAR is the second most watched sport on american television, behind footfall.

Jim: What is 2 stock cars and the cars we see on the road?

Host: Stock cars used to be produced in car factories. They were not specially designed for racing. But now most stock cars are 3 designed and built. The power from the engine pushes the car forward from the back wheels instead of pulling it forward with the front wheels.

Jim: What are the NASCAR races like?

Host: NASCAR races generally use 4 of different lengths that require turns to the left. There are short tracks, longer tracks called speedways and even longer ones called super-speedways. These require right and left turns.

Jim: Which is the most popular completion of NASCAR?

Host: The Sprint Cup uses all these kinds of tracks, so it is the highest level of competition and most popular of all NASCAR series. People often use the words Sprint Cup and NASCAR as if they were the same thing.

Jim: 5 does a competition take?

Host: The ten month thirty-six race Sprint Series began in February in Daytona Beach, Florida. The Daytona Five Hundred race is one of the most famous races of all. The drivers race around the super-speedway two hundred times to travel about eight hundred kilometers 6 .

Jim: Who did the best in this season?

Host: This year Matt Kenseth was declared the winner on February fifteenth. Although he had several laps still to go around the track.

Jim: But who is the champion?

Host: Right now, Jeff Gordon is in first place in the Sprint Cup series. His victory Sunday at Texas Motor Speedway in Fort Worth was especially sweet. It followed forty-seven winless races. Jeff Gordon is a four-time Sprint Cup champion.

Task 3: Practice dialogues according to the situations provided with your partner.

1. Mike and Ben are watching car racing. They are talking about the teams and drivers.
2. Antony is a journalist of a sport magazine. He is interviewing a driver who has just won in a competition.

Reading material: From the first car to the present

Cars are an inevitable part of today's world, with umpteen models adorning every nook and corner of the world. The birth of the car and its periodic evolution through the ages is indeed an interesting subject to many and is worth a thorough study. It is thought that the modern cars that we see on the roads today are the result of over 100,000 patents!

First Cars

It is said that the first real motor car came into existence only in 1885. Till then, steam powered vehicles were in use. Although it was thought that steam powered cars

came to be invented as early as 1672 by Ferdinand Verbiest, little information is available today of his creation. The main credit for the same goes to a French engineer and mechanic, Nicholas-Joseph Cugnot, whose steam driven military tractor which was built at the Paris Arsenal, was used by the French army to haul up arms and ammunitions.

Early History

Racing cars began competing soon after the first petrol-powered cars were developed. The first car races were good publicity for fledgling car manufacturers because it gave them a chance to show off their speed and control in the hopes of luring people to purchase their own cars. The first organized race was held in July 1894 between the cities of Paris and Rouen in France. A winner was decided from the 25 entrants based on speed, safety and handling instead of simply who finished the race in the fastest time. The honors were shared between Georges Lemaître in his Peugeot and René Panhard in his Panhard.

In 1895 the first Paris-Bordeaux-Paris time trial was held, and in 1897 the first purpose-built race car venue in the world was built in Nice, France, which featured its own “Speed Week”. The first race to be held in the U. S. took place in Chicago from the south side of the city, along the shorefront to Evanston, Illinois, also in 1895.

First Race Circuits

The first purpose-built race circuit was opened in 1907 in Brooklands, England, featuring a three-mile concrete surface and steep banked curves. This design is thought to be the inspiration for the Indianapolis Speedway, Indiana. Though the Brooklands circuit was the first to be built specifically for car racing, the first to be adapted for the purpose was the Milwaukee Mile, Wisconsin. Today the Milwaukee Mile is the oldest racing track in the world, having played host to car races for over 107 years since 1903.

By the end of World War I, cars had been further developed for speed and featured aerodynamic improvements as well as more powerful engines. It was around this time that car racing began to branch into distinctly separate disciplines.

The speed and competition of auto racing has appealed to drivers and spectators for many years. European racers led the way, with Americans quickly following in the pursuit of racing adventure. The Indy series, Formula One, CART, NASCAR and a lot of other forms of car racing have since developed, leading to an international racing industry that claims the passion of millions of fans. In 2012, auto racing is one of the most widely viewed spectator sports in the world.

New Words:

1. inevitable	[ɪn'evɪtəbl]	adj.	必然的, 不可避免的
2. umpteen	[ʌmp'ti:n]	adj.	无数的; 很多的
3. adorn	[ə'dɔ:n]	vt.	装饰; 使生色
4. periodic	[ˌpɪəri'ɒdɪk]	adj.	周期的; 定期的
5. evolution	[ˌi:və'lʊ:ʃ(ə)n: 'evʃ]	n.	演变; 进化论; 进展
6. thorough	['θʌrə]	adj.	彻底的; 十分的; 周密的
7. patents	['pætnt]	n.	专利 (patent 的复数形式); 专利权
8. military	['mɪlɪt(ə)rɪ]	adj.	军事的
		n.	军队, 军人
			[复数 military 或 militaries]
9. arm	[ɑ:m]	n.	手臂; 武器; 袖子; 装备
10. ammunition	[æmjʊ'nɪʃ(ə)n]	n.	弹药; 军火
		vt.	装弹药于
11. fledge	[fledʒ]	vi.	长羽毛
Fledging	['fledʒɪŋ]	n.	羽毛初长的雏鸟; 无经验的人
12. lure	[l(j)ʊə]	n.	诱惑; 饵; 诱惑物
13. entrant	['entr(ə)nt]	n.	进入者; 新会员; 参加竞赛者
14. venue	['venju:]	n.	发生地点
15. concrete	['kɒŋkri:t]	adj.	混凝土的
16. aerodynamic	[ˌɛrədaɪ'næmɪks]	adj.	空气动力学的, [航]航空动力学的
17. discipline	['dɪsɪplɪn]	n.	学科; 纪律; 训练; 惩罚
18. pursuit	[pə'sju:t]	n.	追赶, 追求
19. multitude	['mʌltɪtju:d]	n.	群众; 多数

Notes:

1. inevitable adj. 必然的, 不可避免的

But I do not believe their default is at all inevitable.

不过, 我并不认为这些违约都是不可避免的。

If the case succeeds, it is inevitable that other trials will follow.

如果这场官司获胜, 其他审判必将效法。

2. periodic adj. 周期的, 定期的

This periodic use of snapshots can be especially useful in detecting trends.

在探测走向时, 这种使用周期快照的方法特别有用。

Its causes range from selective logging and burning, to periodic harvesting of firewood.

它的原因包括选择性砍伐焚烧和定期采伐木柴。

3. compete v. 竞争, 比赛

About 800 athletes competed in fifteen events.

大约有 800 名运动员参加了 15 个项目的竞赛。

It might not feel like competing with us for resources.

它也许并不愿意与我们竞争资源。

4. based on 以.....为基础

All of the work we do is based on science.

我们所做的一切都是在科学的基础上完成的。

The plan of our country is based on a rising economy.

我国的计划建立在不断发展的经济的基础上。

5. feature n. 特色, 特征 featured adj. 特定的

Want to have your own workspace featured in Workspace of the Week?

想在周工作区中拥有你自己的专栏吗?

For that price, a vendor's coupon becomes the featured deal of the day in a certain city.

按这个价格, 一个供应商的优惠券在某个特定城市就能变成特色卖点。

6. be adapted for 适宜

We also anticipate that the technology that we develop could be adapted for other and very varied uses.

我们也期望我们发展的这一技术能在其他各种领域得到应用。

"The current right to data protection needs to finally be adapted for the digital world", she said.

“当前对于数据保护的權利最终需要适应数字世界”, 她说。

7. branch n. 分支, 分部 branch into 分支成; 涉足某事

A repository can branch into multiple streams, which are distinguished by name.

资源库可以分支成多条流, 这些流用名称加以区别。

Ultimately, we hope to branch into the Asian market.

最终, 我们希望进入亚洲市场。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. Cars can be seen everywhere in the world. ()
2. The first real motor car came into existence only in 1885. Till then, petrol- powered vehicles were in use. ()
3. Racing cars began competition only in 21st century. ()
4. The first purpose-built race car venue in the world was built in Nice, France. ()
5. Car racing is more popular in Europe than in the US. ()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the information in the passage, and then try to retell the passage.

F1 vehicle race

competition	process	management	sponsor	understand
Different	located	Formula One	conducts	precise

F1 is the abbreviation for the 1, Chinese is level of formula cars. Why calls F1 (“level of formula cars”)? It’s because his each spare part manufacture 2 all likes mathematics equation to be equally 3. But Formula 1 Grand Prix abbreviation F1GP, translates into Chinese is “level of equations grand prize contests”. Actually this 4 full title should be “a level of formula cars world series”, English writes is “FIA Formula1 Grand Prix World Championship”. But, usual saying F1, everybody can 5 that, this was operates the quickest machine on the discussion land. FIA (Federation International Automobile) namely “the international automobile movement federation” is the F1 6 unit, the abbreviation international steam is joint. The headquarters are 7 in the Swiss Geneva, incumbent President Marx Mosley. F1 is the most important competition which FIA 8, in addition, but also has other 9 ranks several dozens kinds of other vehicle races competition. F1 is in the formula car standard which FIA draws up, rank highest, therefore by “1” naming. (Similar also has F1 motor dory big game, but is not the FIA jurisdiction scope) FOM (Formula One Management) is the F1 10 company, is English multimillionaire Stone.

Task 3: Translate the following sentences into Chinese.

1. It is one of the three famous sports all over the world, which are Olympic

Games, Football World Cup and F1.

2. When referring to F1, many people may be excited by its incredible fast speed and fabulous appearance.

3. As the car passes through the particular track, the display lights up with the relevant flag color.

4. The chequered flag means the session has ended.

5. A driver will shift gears(换挡) per two seconds and lose more than 4 kilograms of water in a game.

Lesson 25: Automobile History (汽车历史)

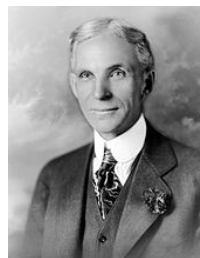
Section one: The brief history of automobile

Task 1: Talking and Practicing

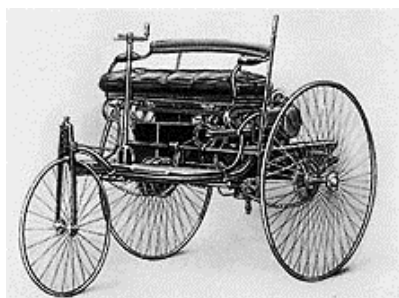
Look at the following four pictures. For the pictures you will read the following four statements. Choose the best statement which matches with every picture.



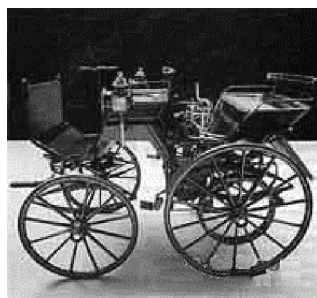
Picture 1



Picture 2



Picture 3



Picture 4

A. A photograph of the original Benz Patent-Motorwagen, first built in 1885.

B. Bertha Benz, the first long distance automobile driver in the world.

C. In 1896, the first 4-wheels vehicle was built.

D. This is the photo of Henry Ford.

Task 2: Read and match. Read the short passage and make a match.

The origin of the automobile is the 3-wheel carriage developed by Nicolas Cugnot in France in 1769. It is powered by a steam engine. This is the first self-propelled highway vehicle in the history.

The cars in the modern sense are powered by light-weight, fast-running internal combustion engines. The designers of cars this kind are Daimler and Maybach in Canstatt and Benz in Pforzheim, Germany. And they created the ancestor of the modern motor car in 1886.

The first American automobile was developed by two brothers named Charles and Frank Duryea. They copied Benz's automobile and made a motor car with one-cylinder engine in 1893.

.....

A. the 3-wheel carriage developed	() 1. Americans
B. The first automobile was made	() 2. in 1893
C. Benz's automobile was copied	() 3. by Nicolas Cugnot
D. Charles and Frank are	() 4. the 3-wheel carriage
E. Maybach and Benz were	() 5. by a steam engine
F. one-cylinder engine was built	() 6. in 1769
G. the ancestor of the modern motor car	() 7. by Charles and Frank Duryea
H. two brothers are	() 8. was built in 1886
I. the first self-propelled highway vehicle is	() 9. In Germany
J. The first automobile was powered	() 10. Charles and Frank

Section two: Guess the future of automobile

Read the dialogues, fill in the missing information, and practice them with your partner.

Dialogue A

Miss Zhang: Hi, Mr. Li. What did you do at the weekend?

Mr. Li: Oh, I went to the auto exposition, the biggest one of Westlake Expo.

Miss Zhang: Really? It must be very fantastic!

Mr. Li: Absolutely! The most exciting car I've met was a conception car of TOYOTA. It is a Fuel Cell Electric Vehicle, which is differing from other cars. And the car is smart and comfortable.

Miss Zhang: I see. Such kinds of vehicles represent the development of future cars, because they are environmental-protected.

Mr. Li: Yeah, the expo will be held till this Sunday. You may go there and have a look.

Miss Zhang: Good idea! And I'll take many photos.

Comprehending questions:

1. What do you think of the future automobile?

_____.

2. When did Mr. Li visit the Expo?

_____.

3. Do you like the Fuel Cell Electric Vehicle? Why?

_____.

4. Have you ever been to an Expo?

_____.

Dialogue B

Read the dialogues, fill in the missing information with the given words, and practice them with your partner.

tracks	fashionable	safety	conditioner	driven
--------	-------------	--------	-------------	--------

WangFang: I'm thinking about the looks of future cars all these days, what do you think, ZhaoQiang?

ZhaoQiang: Oh, that's interesting! Cars will be quite different! The motor is quicker than other cars. The car can be 1 500 kilometers per hour.

WangFang: What's more, computers are going to be inside every car. It is going to control the car. You don't need to be worried about the 2.

ZhaoQiang: And the city would be not so crowded and noisy, because cars are going to go on special 3.

WangFang: I hope there is a special air 4 in the car, thus you can be warm in winter and cool in summer.

ZhaoQiang: Exactly! If I have this car, I will be very 5.

Task 3: Practice

Practice dialogues according to the situations provided with your partner.

1. Joe and Jack are visiting the Future Auto Expo, they are talking about the future automobiles.
2. Li Xia and Wang Fang are good friends and Wang wants to buy a car. They are talking about what kind of car is better.

Reading material: Future automobiles

As one of the most important private transportation tools in the modern world, cars are the key factor to measure the development level of a country. There are four aspects the future car concerned with. Intelligence—CPU of a car will be directly connected with CPU of a computer, which can fulfill computerized driving. Energy Saving—with people's sense of environmental protection getting stronger, the traditional gasoline engine must be replaced by newly practical one like electric engine. Comfort—not only refers to the comfort of inner space, but the convenience of driving. Safety—safety systems like ABS will come first in designing a practical car.

In the future car we will have the switch on/of automated driving. ABS is the first system in the car. ABS reduces the brake power on one wheel against the will of the driver. The airbag is decided to inflate by electronic decision-making.

Computers will take over tasks where a simple decision has to be made fast. Today we have the knowledge to get a 3D picture interpreted by a computer. We can measure the distance electronically. The highway can be overseen by a computer. The problem is that a computer-guided car does not have the right to make mistakes. The manufacture would be responsible. So full automated driving will not be available for the near future.

Gradually comfort systems like cruise control that considers external factors like weather, road marks and traffic around us and GPS will enter the car. Automated driving is much more complex although we would be happy with a system helping us to avoid driving into the stopping vehicle before us.

The following conception cars are representing the tendency of future cars.

Citroen C-Airdream: the highlight of this car is to adopt “Drive-by-Wire” system,

by which steering system and braking system can be computer-guided.

New words:

1. brief	[bri:f]	adj.	简洁的；简明的
2. origin	['ɔrɪdʒɪn]	n.	起源
3. self-propelled	['selfprə'peld]	adj.	自力推进的
4. Internal	[in'tə:nəl]	adj.	内部的
5. Combustion 英]	[kəm'bʌstʃən]	n.	燃烧
6. Ancestor	['ænsestə]	n.	祖先
7. cylinder	['sɪlɪndə]	n.	气缸
8. exposition	[,ekspə'zɪʃn]	n.	博览会；展览会
9. fantastic	[fæn'tæstɪk]	adj.	奇异的，极好的
10. Conception	[kən'sepʃn]	n.	概念；设想，构想
11. environmental	[ɪn,vairən'mentl]	adj.	环境的
12. fashionable	['fæʃnəbl]	adj.	流行的；时髦的
13. aspect	['æspekt]	n.	方面；面貌；形势
14. computerize	[kəm'pjʊ:təraɪz]	vt.	用计算机做[操纵，操作，编排等]
15. Inflate	[ɪn'fleɪt]	vt.	使充气（于轮胎、气球等）； （使）膨胀；
16. manufacture	[,mænju'fæktʃə(r)]	vt.	制造，生产；加工
		n.	制造；工厂
17. external	[eks'tə:nl]	adj.	外面的，外部的
		n.	外部，外观
18. tendency	['tendənsi]	n.	倾向，趋势；癖好
19. highlight	['haɪlaɪt]	n.	强光，最精彩的部分
20. steering	['striəriŋ]	adj.	转向的

Notes:

1. measure vt.

1) 测量；计量

We measured the distance.

我们测量了距离。

2) 打量；估量

She measured the stranger with her eyes.

她用双眼打量着那个陌生人。

2. concern vi. , vt.

1) 涉及，关系到；影响到

The letter is chiefly concerned with export commodities.

这封信主要是关于出口商品的。

The news concerns your brother.

这消息与你兄弟有关。

2) 使担心；使不安[(+about/for)]

The boy's poor health concerned his parents.

那男孩健康状况不佳，使他的父母亲忧虑。

He is concerned for her safety.

他担心她的安全。

3) 使关心[(+about/with)]

He was very concerned about her.

他对她非常关心。

3. refer to 提到

Don't refer to this matter again, please.

请别再提这件事。

4. inflate vt. 使膨胀；使得意；使通货膨胀

With a supply of compressed air the large balloon inflated in a matter of seconds.

大气球注入压缩空气后，几秒钟就充足了气。

5. interpret vi, vt. 解释；演出；翻译

I didn't presume to interpret it.

我不敢对这一点妄加解释。

Would you please interpret for me?

请你为我翻译一下好吗？

6. external adj.

1) 外面的，外部的，外来的

They did it in response to external pressures.

他们这么做是迫于外界的压力。

2) 表面的, 非本质的

She sets great store by external politeness.

她很注重表面的虚礼。

7. complex

1) adj. 复杂的, 错综复杂的; 难懂的

It was a complex problem.

这是一个复杂的问题。

2) n. (心)情结, 情丝 [(+about)]

She has a complex about rats.

她对老鼠有病态恐惧。

8. Automated driving is much more complex although we would be happy with a system helping us to avoid driving into the stopping vehicle before us.

尽管汽车上装有能帮助我们在行驶中不与前面急刹车的汽车相撞的系统, 我们并为之庆幸, 但自动驾驶要复杂得多。

although 引导让步状语从句。

helping us... 在句中作定语, 修饰名词 system

stopping 在句中作前置定语, 修饰名词 vehicle, 意为“正在刹车的机动车”。

现在分词作定语时, 位置不定, 可以是一个现在分词前置, 也可是短语后置。

现在分词作定语表主动或表动作正在进行。

The (flying) kites are high in the sky.

飞着的风筝高高飘在空中。

The boy (sitting by the window) is Tom.

坐在窗边的那个男孩儿是汤姆。

Task 1: Read and judge. Read the passage and judge whether the statement is true or false.

1. ABS reduces the brake power and can do the same as the driver commands.

()

2. Today we can measure the distance electronically on a highway.

()

3. A computer-guided car will never make a mistake.

()

4. Full automated driving will come true soon.

()

5. Safety system is the most important factor of making a full automated driving car in the future.

()

Task 2: Read, complete and retell. Read the passage again and fill in the blanks with the given words.

computers	electronically	complex	comfort	safety
automated	ABS	private	intelligent	energy-saving

Cars are one of the most important 1 transportation tools. There are four aspects concerned with the design of future cars; they are 2, 3, 4, 5. Future cars will fulfill 6 driving. 7 system comes first in automated driving. Installed with 8, future cars have automated driving by all the decisions are 9 made. However, the problem is that computers cannot make mistakes; therefore, automated driving is much more 10 and will not be available for the near future.

Task 3: Translate the following sentences into Chinese.

1. As one of the most important private transportation tools in the modern world, cars are the key factor to measure the development level of a country.
2. With people's sense of environmental protection getting stronger, the traditional gasoline engine must be replaced by newly practical one like electric engine.
3. A computer-guided car does not have the right to make mistakes.
4. Automated driving is much more complex although we would be happy with a system helping us to avoid driving into the stopping vehicle before us.
5. Hybrid engine design makes the constant power source by controlling the accelerator.

附录 A

常用汽车英文缩略语

A

A	A-post, A-pillar	A 柱
A/C	Air Conditioning	空调
A/CL	Air Cleaner	空气滤清器
A/F	Air-Fuel Ratio	空燃比
A/T	Automatic Transaxle Or Transmission	自动变速箱
AAD	Auxiliary Air Control Device	辅助空气装置
ABRS	Air Bag Restraint System	安全气囊
ABS	Anti-Lock Brake System	防锁刹车系统，防抱刹车系统
AC	Alternating Current Generator	交流发电机
AC	Accumulator	蓄电池，储压器
AC	Automatic Control	自动控制
ACG	Automatic Control Gear	自动控制变速
ADL	Automatic Door Lock	自动门锁
AFCO	Automatic Fuel Cutoff	自动断油装置
AFS	Auxiliary Fuel Supply System	辅助供油系统
AGVS	Automatic Guided Vehicle System	车辆自动导向系统
AIS	Automatic Idle Speed	自动怠速
Alm	Alarm	警报器
ALR	Automatic Locking Retractor	安全带自动锁定装置
Ant	Antenna	天线
AOC	Air Oil Cooler	机油空气冷却器
ASD	Auto Shut Down	自动切断
AT	Automatic Transmission	自动变速器
ATC	Automatic Temperature Control	温度自动控制器
ATC	Automatic Timing Corrector	自动正时器

ATF Automatic Transmission Fluid
ATM Automatic Transmission
AWD All Wheel Drive

自动变速箱油
自动变速箱
四轮驱动

B

B/U Back-Up
BFLI Brake Fluid Level Indicator
BOO Brake On-Off Switch
BTRY Battery

备用，倒车（灯）
制动液液面指示器
制动开关
蓄电池

C

C Celsius Scale
C&M Care and Maintenance
C.E. Check Engine
CACCS Comprehensive Automobile
Control System
CAL Collision Avoidance Light
Canc Cancel
CB Contact Breaker
CCC Computer Command Control
CCM Central Control Module
CHA Charge
Cig Ltr Cigarette Lighter
Clch Clutch
Colnt. Coolant
Comp. Compressor
Cond. Condenser
CRNRNG Cornering
CRS Child Restraint System

摄氏温标
维修及保养
引擎故障灯
汽车综合控制系统
防撞灯
取消
断电器
电脑指令控制
中央控制模块（中央电脑）
充电
点烟器
离合器
冷却液
压缩机
电容器，冷凝器
转向
儿童专用安全装置

D

D Drive
DCLV Deceleration Valve
DCM Direct Current Motor
Dece 1 Deceleration
DEF Diesel Exhaust Filter

前进挡
减速阀
直流马达
减速
柴油机的排气过滤器

DEF.	Defogger or Defroster	除雾或除霜
Disp	Display	显示
Dnshft	Downshift	低挡位, 降挡
DR.B	Drum Regulation Braker	鼓式制动器
DYN	Dynamotor	直流发电机
E		
EAT	Electronic Automatic Transmission	电子控制自动变速器
EC-AT	Electronic Controlled Automatic Transmission	电子控制自动变速箱制系统
ECVT	Electronic Continuously Variable Transmission	电子无级变速箱
EDPAC	Engine Diagnostic Package	发动机故障诊断装置
EGRV	EGR Vent Solenoid EGR	电磁阀
EI	Electronic Ignition	电子点火
ELR	Emergency Locking Retractor	安全带紧急自动束紧装置
ESC	Electronic Skid Control	防滑刹车系统
ESG	Engine Speed Governor	发动机调速器
ETV	Electronic Throttle Valve	电子节流阀
EXV	Exhaust Valve	排气门
F		
F	Fahrenheit	华氏(温度)
F/A	Fuel-Air Ratio	燃油空气混合比
F/F	Front Engine/Front Wheel Drive	前置发动机前轮驱动
FA	Failure Analysis	故障分析
FC	Fuel Cut	断油
FC	Fuel Cutout	燃料截断装置
FCU	Fuel Control Unit	燃油控制装置
FIR	Fuel Indicator Reading	燃油表读数
FIREX	Fire Extinguisher	灭火器
FLP	Fault Location Panel	故障诊断仪表板
Flshr.	Flasher	闪光器
FLTR	Filter	过滤器, 滤清器

Gen	Generator
Gov	Governor
GPS	Global Positioning System
GW	Gross Weight

H/D	Headlight
H/D	Heater/Defroster
HFP	High Fuel Pump
Hrn.	Horn

I-L	E In-Line Engine
I/P	Instrument Panel
IDI	Indirect Injection
IDM	Ignition Diagnostic Module
IGCM	Ignition Control Module
IGN	Ignition
INC	Intake Close
INF L	REST Inflatable Restrain
INJ	Injector
Inj.	Injector or Injection
INO	Intake Open
Inp	Input
IOS	Instrumentation Operations Station
IP	Instrument Panel
IVT	Infinitely Variable Transmission

Junc	Junction
------	----------

Kg	Kilograms
KW	Kilo-Watt

L	Liter
---	-------

G

发电机
调速器
卫星导航系统
总重量

H

大灯，头灯
加热器-除霜器
高压油泵
喇叭

I

直列式发动机
仪表板
间接喷射
点火诊断模块
点火控制器
点火
进气阀
安全气囊
喷油嘴
喷射器或喷射
进气开
输入
仪表操作台
仪表板
无级变速器

J

连接

K

公斤
千瓦

L

升

L-4	Four Cylinder In-Line(engine)	直列式 4 缸发动机
L-6	Six Cylinder In-Line(engine)	直列式 6 缸发动机
L.O.	Lubrication Oil	润滑油
Lat	Latched	门锁
LCD	Liquid Crystal Display	液晶显示器
LF P	Low Fuel Pump	低压油泵
LIM	Linear Induction Motor	线性感应电动机
LIM	Limit	极限
M		
M/C	Mixture Control	混合气控制器
M/T	Manual Transmission	手动变速箱
Mixt.	Mixture	混合气
MMV	Manual Modulation Valve	手动调节阀
MPFI	Multi-Port Fuel Injection	多点燃油喷射
MPH	Miles Per Hour	每小时英里
MPI	Multi-Point Injection	多点喷射
MV	Mean Velocity	平均速度, 平均车速
N		
N	Neutral	空挡
N/A	Natural Aspirate	自然吸气, 非增压发动机
NFB	Non Feedback Carburetor	无反馈化油器
NFL	Normal Full-Load (speed)	正常全负荷转速
O		
O	Off	关, 离开
O/D	Over Drive	超速传动
OC	Oil Consumption	润滑油消耗量
OCV	Oil Control Valve	机油控制阀
OI	Overdrive Inhibit	超速抑制
P		
P	Park	停车
P	Pattern Select Switch	模式选择开关
P/B	Power Brakes	动力刹车
P/N	Park/Neutral	驻车/空挡

P/S	Powder Steering	动力转向
PAB	Power-Assisted Brake	助力制动
PD	Protective Devices	保护装置
PIST	Piston	活塞
PTO	Power Take Off	关闭电源

Q

QEAV	Quick Exhaust Air Valve	快速排气阀
QOS	Quick Exhaust Valve	快速起动装置

R

R.C.	Remote Control	遥控
RABS	Rear Anti-Lock Brake System	后防抱制动系统
Rdcr	Reducer	减压器, 减速器, 减震器
Reg.	Regulator	调节器, 调压器
RPM	Revolutions Per Minute	每分钟转速
RPR	Repair	修理
RPS	Revolutions Per Second	转/秒
RPV	Remotely Piloted Vehicle	无人驾驶车
RWM	Read/Write Memory	读/写存储器

S

S.W.	Switch	开关
S/B	Seat Belt	座椅安全带
SB	Secondary Battery	辅助蓄电池
SC	Supercharge	增压
SCS	Speed Control Switch	速度控制开关
SCS	Spark Control System	点火控制系统
SCS	Slip Control System	控制车轮打滑装置
SDU	SRS Diagnostic Uni	安全气囊诊断装置
SFC	Specific Fuel Consumption	单位油耗量, 燃油消耗率
SIL	Shift Indicator Light	换挡指示灯
SIPS	Side Impact Protection System	侧撞防护钢梁
SIR	Supplemental Inflatable Restraint	安全气囊
SL	Solenoid	电磁阀
SSD	System Self-Diagnostics	系统故障自动诊断

STRG	Steering	转向
STV	Suction Throttling Valve	吸气节流阀
T		
T	Throttle	节气门, 油门
T.C.	Turbo Charge Engine	涡轮增压发动机
TAI	Thermal Anti-Icing(system)	加热防冻系统
TC	Turbo Charge	涡轮增压
TCS	Taransmission Control Spark	变速箱控制点火装置
TPS	Thermal Protection System	防热系统
TRANS	Transaxle/Transmission	速箱
TWC	Three Way Catalytic Converter	三元触媒转换器
TWC	Three Way Catalyst System	三元催化系统
TWI	Tread Ware Indicator	轮胎防磨耗指示器
U		
UB	Underbody	车底
V		
V	V-Engine	V 型发动机
VACP	Vacuum Pump	真空泵
VATS	Vehicle Anti-Theft System	车辆防盗系统
VHCL	SPEED SE Vehicle Speed Sensor	车速传感器
VIN	Vehicle Identification Number	车辆识别号码
W		
W	Weight	重量
W.G.	Worm Gear	蜗轮传动
W	With	使用, 有, 附
W/	Shield Windshield	挡风玻璃
WOT	Wide Open Throttle	节气门全开
Y		
Y	Yellow	黄色的
Z		
ZEV	Zero-emission vehicle	零污染排放车辆

附录 B

常用汽车音响英文词组及缩略语

AM/FM(SELECTOR)	调幅/调频
AUTO REVERSE	自动换向
AUTO STOP	自动停带
BALANCE	平衡
BALANCE CONTROL	平衡控制
BAND SELECTION SWITCH	波段选择开关
BASS CONTROLS	低音控制器
CASSETTE EJECT(SWITCH)	磁带退带 (按钮)
CASSETTE TAPE SLOT	盒带插入口
FF*REW	快进与快退 (键)
FF/EJECT	快进/出盒 (键)
FM STEREO	调频立体声 (键或灯)
FREQ RANGE	频率范围
FRONT(FEAR)SPEAKER	前 (后) 扬声器
HOUR*MINUTE SET	小时*分钟 (调校)
KEYING	键控, 键入
KNOB	按钮
LINE OUT	线路输出
LOCKABLE FAST FORWARD	同步快速向前
LOCKABLE FAST REWIND	同步快速回转
MANUAL*SEEK	手动*自动搜索 (按钮)
MANUD TUNIND KNOB	手动调谐 (钮)
MEMORY INDICATOR	记忆指示器
MEMORY SWITCH	记忆功能开关
METAL/CRO2 TAPE SWITCH	金属/铬带选择键
MONO/STEREO	单声道/立体声

MONO/STEREO SWITCH-OVER	单声道/立体声变换(开关)
ON-OFF SWITCH & VOLUME CONTROL	带电源开关的音量控制(钮)
PRESET STATION SWITCH	预选台(置)按钮
PROG(PROGRAM)	节目(变换按钮)
PROGRAM SWITCH	音乐带正反面放音变换开关
PUSH CLOCK	按下时钟(钮)
RANGE BUTTON	波段推拉钮
ROD ANT	拉杆天线
SCALE	刻度(盘)
SCAN	自动扫描.搜索
SCAN MEMO	自动搜索存储
SEEK	搜索
SELECTOR	选择器
SMC	软静噪控制
SNC	立体声噪声控制
STEREO INDICATOR	立体声指示(灯)
TAPE DIRECTION INDICATOR	磁带正反向走带指示器
TAPE RUN INDICATOR	走带指示灯
TONE	音调(控制器)
TONE CONTROL	音调控制(钮)
TRACK INDICATOR	磁迹指示器
TREBLE	高音
TUNE	调谐(旋钮)
TUNING/CLOCK SET KNOB	调谐/时钟调校钮
VOLUME CONTROL COMBINED WITH ON/OFF	音量控制/电源开关组合控制

附录 C

常用计量单位缩略语

1. 公制

1) 长度

cmm	centimillimeter	忽米
dmm	decimillimeter	丝米
mm	millimeter	毫米
cm	centimeter	厘米
dm	decimeter	分米
m	meter	米(公尺)
dam	decameter	十米
hm	hectometer	百米
km	kilometer	千米

2) 重量及质量

mg	milligram	毫克
cg	centigram	厘克
dg	decigram	分克
g	gram	克
dag	decagram	十克
hg	hectogram	百克
kg	kilogram	千克(公斤)
q	quintal	公担
t,mt	metric ton	公吨

3) 容量

ml	microliter	微升
ml	centiliter	毫升
cl	centiliter	厘升
dl	deciliter	分升
l	liter	升
dal	decaliter	十升
hl	hectoliter	百升
kl	kiloliter	千升

4) 时间

s	second	秒
min	minute	分
h	hour	(小)时
d	day	天(日)

5) 功率

w	watt	瓦
kw	kilowatt	千瓦
ps	horsepower	马力

6) 压力应力及扭力

N/m^2	牛顿/米 ²
kgf/cm^2	千克力厘米 ²
kgf/m^2	千克力米 ²

7) 速度

r/min	每分转数
m/s	米/秒
m/min	米/分
km/h	公里/小时

2. 英、美制

1) 长度

mi.	mile	英里
fm.	fathom	英寻
yd.	yard	码

ft.	foot	英尺
in.	inch	英寸

2) 质量

tn.	ton	吨
英	long ton	长吨
美	short ton	短吨
cwt.	hundredweight	英担
lb.	pound	磅
oz.	ounce	盎司

3) 液量

gal.	gallon	加仑
qt.	quart	夸脱
pt.	pint	品脱
gi.	gill	及耳

附录 D

参考译文

Chapter 1: Automobile Overview (汽车概述)

Lesson 1: Car Logo (车标)

对话 A:

一位顾客想买一辆新车，他走进一家 4S 店。一位销售人员接待了他。

销售员：早上好！先生。你需要看看什么车啊？

顾客：是啊。嗯……能告诉我奔驰车在哪里吗？

销售员：当然了。在那边。请这边走。

销售员：这就是奔驰。看这个星星，是奔驰的车标。关于这三角星流行的一种说法是：设计者想让他车行驶在陆地、海上、空中。

顾客：哇！太酷了。它看起来很大气。

销售员：是啊。您想看看里面吗？

顾客：我可以吗？

销售员：您对这款车满意吗？

顾客：满意。但是我得和我妻子商量一下，毕竟，这不是小事。是不是？

销售员：没关系。再见。

阅读材料 A:

汽车制造商的标志

不同的汽车有不同的标志。标志是一个汽车制造商或一系列的汽车的象征。让我们熟悉一些世界上著名的汽车制造商的标志。

我相信你一定在大街上看到过这些标志。他们都是美国汽车制造商的标志。左边一个是通用汽车公司的标志，中间一个属于克莱斯勒公司，而右边的是福特公司的象征。他们的产品出现在中国市场已经很长一段时间了，他们都和中国汽车企业有合资公司。

你不会不熟悉这些商标。“大众”的缩写是“VW”，一个德国汽车制造商。越来越多的中国人了解这个公司。自从在上海成立第一个合资企业以来，大众在发展中国市场上取得了很大的进步。现在大众与中国企业保持良好的合作。你在大街上看到近 30% 的汽车都是大众产品。从早期的桑塔纳到最新的奥迪 A8，从 Golf，捷达到 Baro 和帕萨特，大众已成为一个速度、安全和舒适的象征。

Lesson 2: Classification of Vehicles (汽车分类)

对话 A:

Jeff: 你好。这里是汽车知识信息中心，需要帮助吗？

Antony: 是的。如果我想说出哪一年的车以及车的名字，我该学点什么？我知道有人一看到车就能说出车的名字。他们是怎么做到的呢？

Jeff: 哦，现在可不容易了，因为车看起来都一样。想要知道哪一年的车和车的名字，你得研究车好长一段时间。

Antony: 我可以通过车的形状辨认车吗？

Jeff: 如果你研究汽车生产厂家，你就会明白众所周知的车的形状。因为整体的豪华外观形状，你会认识奔驰，你也知道奥迪具有欧洲风格。搜索网页，记下车的形状，车的细节，你就会明白一切。

Antony: 谢谢你，你的建议很有价值。

阅读材料 A:

机动车的分类

汽车被发明已经超过 100 年了。今天可以说是车轮运行在全世界。世界不同地方有许多类型的汽车。在不同的国家有各种类型的汽车。这只举一种汽车分类的例子。

根据它们的应用，汽车被列为卡车、客车和专用车辆。配备车床的卡车用来运输货物，高级的、专用的车身如翻斗车用来运输松散和黏滞货，罐车运送液体，冷藏车运送易腐货物等。除了体型外，卡车还可按照其承载力和越野能力来分类。

客运车辆分为从一到六人座椅的汽车和公共汽车。公共汽车细分为城市和城际的。旅游公共汽车是一个单独的组。根据它们的长度，公共汽车被列为面包车、小公交、大公交和铰接式公共汽车。

专用汽车是为了执行特定的任务而装备的。其中有救火车和垃圾车、救护车、塔车、水箱车等。

Lesson 3: Automobile Components (汽车元件)

对话 A:

我的车不动了

詹妮：你好！我是詹妮。

迈克：哦，你好，詹妮。

詹妮：听着，迈克。我有一个问题。

迈克：什么事啊？

詹妮：我的车又不能动了。引擎又出问题了。

迈克：第一次是什么时候抛锚的？

詹妮：大约 10 天前。在过去的几天里它不时地发出噪声。有时候能动，有时候不能。太烦人了。

迈克：你真的需要换一辆新车了。

詹妮：是的，我知道。但是，你看，我得去机场接汤姆。我现在可以用你的车吗？

迈克：当然可以。我今天不用。你随时可以过来。

詹妮：大约一周后过来，谢谢你。

迈克：不客气。再见。

阅读材料 A:

什么是汽车悬架系统

汽车悬架系统有两个作用：保持汽车车轮与路面的良好接触，提供乘客的乘坐舒适性。大量的工作是由弹簧来完成的。在正常情况下，弹簧通过压缩和伸张均匀地支撑着车身上下运动。车身的上下运动在每一次冲击后会引发跳动和摆动，这样会使得乘客很不舒服。这种不舒适性可以通过减震器来降低。

当我们谈论汽车悬架时，是指前后弹簧用来悬挂的汽车重量。在现代的汽车上弹簧的结构有很多形式、形状、尺寸、标准及负载。弹簧种类包括钢板弹簧、螺旋弹簧、空气弹簧和扭杆弹簧。弹簧以各种组合形式在车辆上配套使用，并用不同的装配技术将弹簧安装在车辆上。

Lesson 4: Automobile Technical Data (汽车技术数据)

对话 A:

亚当：嗨，克里斯，你在忙什么？

克里斯：我在阅读一些关于各种车型的小册子。

亚当：如此说来你想买新车了？

克里斯：看起来是这样了，我妻子一直唠叨这件事。我本来认为没有车也能生活，但是宝宝即将出生，是该买车的时候了。

亚当：这将是你的第一部车吗？

克里斯：是的，几年来我一直骑自行车上班，后来我买了一辆摩托车。

亚当：该买第一辆车了，哇，太兴奋了！

克里斯：是的。但是汽车的技术参数也很重要。对此我知道的很少。决定买个对我们最好的车很难啊！

亚当：是的，这是个很难的决定。每辆车都有自己的优势和缺点。你找找轿车吧？

克里斯：好的。我考虑考虑你的建议。

阅读材料 A:

没有保险的车

你可以没保险开车，但如果你出了事故，后果会很严重。无论如何，如果你曾经有保险，但你保险到期了，保险公司依法通知执照部门你不再有保险，如果你不出示你新的保险，你的执照可能被暂停。

不管事故错在谁，大多数州需要在事故发生的 10 天内向机动车辆部门报告事故。机动车部门收集的事故报告将包括关于你保险的信息。如果你没有保险，这部分资料你就缺项。车管所给你一个罚款，可能撤销你的牌照。一些州将撤销牌照 30 天或更多天，即使你在规定的时间内给车上了保险。

在大多数州没有携带某种形式的保险来满足特定州的最低经济责任而运行机动车是非法的。大多数州对开车没有保险的人也有严重的处罚，两种最常见的处罚是被吊销驾照一年，扣留车辆，你必须支付巨额罚款把车赎出来。同样，如果你没有保险出事故，你不但被处如上所述的惩罚而且你还可能被起诉，很长很长一段时间被经济制裁。

Lesson 5: Import vehicle labels (进口车标签)

对话 A:

我们社区的停车场有多大？

A：我们社区的停车场有多大？

B：有 50 个停车位。

A: 所以你们这些人应该会很忙了。

B: 为什么这么说?

A: 我敢说这里总是停满了车。

B: 正好相反, 先生。当人们开车去上班时, 大部分的车位是空着的。

A: 啊, 我明白了。

B: 我们打算出租一些车位, 按小时计算收费。

A: 像这样的小汽车停一小时怎么收费?

B: 我不太确定, 但是至少一小时得 10 元。

A: 如果有人在这儿停了 1 小时 10 分钟收多少钱?

B: 那可能将会收 20 元, 先生。我们只按小时收费, 不按每小时分开收费。

A: 那太贵了。

阅读材料 B:

VIN (Vehicle Identification Number), 中文名叫车辆识别代码是制造厂为了识别而给一辆车指定的一组字码。SAE 标准规定: VIN 码由 17 位字符组成, 所以俗称 17 位码。它包含了车辆的生产厂家、年代、车型、车身形式及代码、发动机代码及组装地点等信息。正确解读 VIN 码, 对于我们正确地识别车型, 以致进行正确的诊断和维修都是十分重要的。车辆识别代码经过排列组合, 可以使同一车型的车在 30 年之内不会发生重号现象, 具有对车辆的唯一识别性, 因此可称为“汽车身份证”。

VIN 的历史可以追溯到 1949 年。但直到 1981 年之前, 标准一直处于变换中。比如: 1965—1969 年的 VIN 有 9 位, 当生产量超过 100 万之一后采用 10 位; 1970—1980 年的 VIN 则固定为 10 位。现行的 17 位汽车识别码始于 1981 年。我国已于 1996 年年底颁布了相关标准, 并已于 1997 年开始实行。

VIN 中不会包含 I、O、Q 三个英文字母。

从左到右数起, 第 10 位编码为车辆出厂年月。

Chapter 2: Automobile Engine (汽车发动机)

Lesson 6: The General Structure of an Engine (汽车发动机的一般结构)

对话 A:

比尔: 你觉得一辆车没有发动机会怎么样?

苏珊: 没有发动机的汽车? 多奇怪啊? 你怎么会选这样的车?

比尔：我什么车都没买。这是一个很长的故事。许多年前，我和女朋友去参观一座城市。在旅馆里有一个导游问我们是否想体验一些奇怪的事情。我们答应了，他就开车把我们带到了一个大可能是 15 度的斜坡下。当我们到了斜坡底部的时候，他停下了车，关掉了发动机，换成了空挡。5 分钟后，汽车开始向前移动了大约 15 米！

苏珊：太让人惊奇了，它怎么会动呢？

比尔：他说是因为地球的磁场，你怎么认为呢？

苏珊：我根本就不知道怎么回事。

阅读材料 A:

发动机和电力

发动机，也叫做车辆的“心脏”，是用来给汽车提供动力的。它包括燃料系统、润滑系统、冷却系统、点火系统和起动系统。一般来说，车辆的运行是由内燃机驱动的。内燃机在汽缸内燃烧燃料，将燃烧所产生的膨胀力或“爆炸”转化成旋转力用来推动车辆运行。

发动机是一个独立的动力装置，把燃料的热能转换成机械能使车辆前进。由于燃料在发动机内燃烧，因此它被称为内燃机。内燃机的空气/燃料混合物被引入一个封闭的汽缸内，在汽缸内被压缩，然后被点燃。燃烧的燃料会引起汽缸压力迅速上升，通过活塞和曲轴这些压力被转化为有用的机械能。最常见的发动机是四冲程活塞式发动机。这四个冲程是进气、压缩冲程、做功冲程和排气冲程。

在往复式发动机中，动力机制被称为曲轴和连杆组件。在这个组件中，所有的主要部件，如发动机曲轴箱和汽缸体、活塞、连杆、曲轴和飞轮一起将热能转变成机械能用来驱动车辆。

活塞将潜在的发动机的能量转化成动能传给曲轴转动。活塞是一个圆柱形状的空心部分，发动机汽缸在里面上下移动。

连杆的作用是连接到曲轴的一端（大端）和活塞在另一端（小端）。

曲轴是用来把活塞的往复运动转化成旋转运动，并处理整个动力的输出。

飞轮是一个相对较重的金属轮，它被牢固地连接在曲轴上。它的作用是帮助发动机运行并顺利地吸收在做功冲程中的动力，而在其他冲程中释放动力。

总之，连杆和引擎的曲轴机制是由不同的部分组成的，每个部分都有自己的功能为车辆产生动力。

Lesson 7: Working principles of the four-stroke-engine(四冲程发动机工作原理)

对话 A:

参考译文 : (客户 B 正在和维修工 A 谈论关于他的车的故障。)

A : 你的车怎么了 ?

B : 我的车开着开着就熄火了 , 我也不知道是什么原因。真的很恐怖。

A : 让我们来检查一下。

B : 好吧 , 那麻烦你了。

(20 分钟后)

A : 查出来了 , 是发动机机油不足导致活塞与缸壁黏连 , 汽车无法完成冲程运转。

B : 什么控制着冲程的行程 ?

A : 曲柄连杆机构控制冲程的行程 , 可能您不太明白。发动机损坏很严重 , 需要一段时间来维修。

B : 真倒霉 , 只能等了。麻烦你了。

A : 不客气。

阅读材料 A:

四冲程发动机的操作

四冲程发动机也被称做四个汽缸的发动机 , 是通过活塞完成四个独立的冲程的内燃机 : 进气、压缩、做功 (燃烧) 、排气。四冲程发动机的主要构成包括 : 进气阀、火花塞、排气阀、燃烧室和活塞头部。

四个冲程指的是进气冲程、压缩冲程、燃烧 (做功) 冲程和排气冲程。一个冲程指的是活塞从上止点到下止点整个一个行程。

1 . 进气冲程 : 在进气冲程过程中 , 活塞从汽缸顶端降到汽缸底部 , 增加了汽缸的容积。空气燃油混合物或者仅仅空气 (柴油发动机中) 会被压入汽缸中。然后进气阀关闭。

2 . 压缩冲程 : 进气阀和排气阀都关闭的状态下 , 活塞回到汽缸的顶端 , 压缩燃烧室内的空气或空气燃油混合物。在压缩冲程 , 空气或空气燃油混合物的温度会上升几百度。

3 . 做功冲程 : 当活塞靠近上止点中心时 , 汽油发动机中被压缩的空气燃油混合物被点燃 , 通常使用火花塞。压缩空气燃油混合物燃烧产生的力推动活塞回到下

止点中心。

4. 排气冲程：在排气冲程中，当排气阀打开时，活塞再次回到上止点中心。

Lesson 8: Crank Connecting Rod Mechanism (曲柄连杆机构)

对话 A:

B: 什么是曲柄连杆机构?

A: 曲柄连杆机构从字面上来说就是曲柄和连杆，但当他们结合在一起的时候就会实现大功能。

B: 听起来很神奇，请你详细给我们解释一下吧。

A: 那好吧，我们都知道活塞在汽缸内的运动是上下往复的直线运动。显然这样不容易向外对汽车做功，那么是什么改变发动机对外做功的方式？——显然是曲柄连杆机构。

B: 哇，曲柄连杆机构太神奇了，小小的机器执行着大功能。这其中肯定蕴含着深刻的道理。

阅读材料 A:

曲柄连杆的传动机制

在活塞往复式发动机内，连杆连接着活塞和曲柄或曲轴。连杆和曲柄一起形成一个简单的机制将往复运动转变成旋转运动。

连杆也可以把旋转运动转变成成为往复运动。历史上，在发动机产生以前，都是这样应用的。

它们不会严格地固定于一端，于是当连杆作上下运动和绕曲柄旋转时连杆与活塞之间的夹角就发生改变。

连杆较小的一端连接活塞销，活塞销（英国用语）或腕销，这通常会给连杆以经常性的压力，但连杆仍能相对于活塞转动即“浮动腕销”。连杆的大端连接于曲柄上的轴颈处，并随着由连杆螺栓固定的可更换的轴瓦转动，螺栓将轴承“盖”固定在连杆的大端处；通常要钻一个通过轴瓦和连杆的大端小孔，以便使增压润滑油能喷到筒壁的一侧，来使活塞和活塞环的运动得到润滑。

连杆承受着巨大的压力，这些压力来自于由活塞产生的循环载荷，而事实上这些压力来自于每次旋转时的拉伸与松弛，以及随发动机转速增大而急剧增大的载荷。一个失效的连杆，通常被称为“扔棒”，它是引起汽车引擎灾难性故障最常见的原因之一，经常使失效的连杆穿过曲轴轴箱的一侧，发动机会遭受无法弥补的损坏。它可能源于连杆的疲劳缺陷、轴瓦失去润滑而导致的失效，或源于连杆螺栓的

缺陷、不适当的紧固,或重复利用已经使用过的(已变形的)螺栓(这是不允许的)。尽管这些经常发生在竞争激烈的汽车运动中,但在为日常驾驶生产的汽车中,这种失效是十分罕见的。这是因为汽车零部件的生产中要使用一个比较大的安全系数,同时往往还使用更系统的质量控制体系。

Lesson 9: Clutch and Transmission (变速器和离合器)

对话 A:

A: 你知道什么是离合器和变速器吗?

B: 知道。它们是汽车的非常重要的组成部分。

A: 我知道变速器是用来转换机械动力的,但是是如何实现的呢?

B: 嗯,它是通过把高转速、低扭矩的机械动力转换成更为有效的低转速、高扭矩的动力实现的。

A: 太神奇了。那么什么是离合器啊?

B: 离合器是一个通过控制压板和摩擦板连接和脱离来把动力由发动机传给变速器的机械装置。

A: 你的意思是离合器位于发动机和变速器之间,脱离时就可以换挡,对吗?

B: 没错。但是现在大部分车都使用自动变速器,这样驾驶员就更容易操作。

A: 谢谢。

阅读材料 A:

对变速器的检查是通过挂挡、换挡、听声音、检查泄露情况来判断故障的。在路试中,对变速器的检查尤其重要:

1. 要检查所有前进挡,以及倒车挡。如果每次挂挡都磨齿轮,则可能是离合器的液压系统或变速器本身有故障。

2. 检查是否能正常入挡。如果发现变速器不能正常挂进挡位,或有齿轮撞击声;或者是挂上挡位后又很难推回空挡等,这说明变速器换挡困难,在熄火后,可以用手握住变速杆,如果很松旷能任意摆动,可能是定位销失效造成的。如果不松旷时也出现换挡困难,很可能是同步器故障造成换挡时的撞击。如果存在这类故障,是需要修理的。

3. 如果在行驶中变速杆跳回空挡,可能是齿轮和齿套磨损严重。这需要专业维修人员拆下变速器查看齿轮的啮合状况。如果发现变速器漏油,也是不正常的。需要立刻维修。

4. 如果在入挡后有异响,可能是相互啮合齿轮工作时有撞击造成的,说明变

速器壳体有损伤，或者是部分齿轮有损害造成啮合过程中的撞击。

Chapter 3: Automobile Chassis (汽车底盘)

Lesson 10: Driveline and Differential (传动系统和差速器)

对话 A:

A: 我可以问您一个问题吗?

B: 当然可以。什么问题啊?

A: 哪个部件是汽车的传动系啊?

B: 嗯, 我必须纠正你一个问题。传动系不是一个单一的零件, 而是由很多零件组合而成的。

A: 真的吗? 那很复杂吗?

B: 是的。在发动机和驱动轮之间的所有部件都属于传动系。

A: 那传动系具体包括什么部件啊?

B: 离合器、变速器、传动轴、主减速器和驱动轴。也有一些部件你不能直接看见, 例如差速器和半轴。

A: 那传动系起着很重要的作用吧?

B: 绝对的。传动系就是把来自发动机的动力传输给车轮, 使车行驶。

A: 好, 我知道了。多谢。

B: 不客气。

阅读材料 A:

差速器完成那两个任务?

车轮以不同的速度旋转, 在车辆转弯时, 差速器的设计是用来驱动两边车轮的同时允许两侧车轮以不同的速度旋转。差速器由差速器壳、行星齿轮、行星齿轮轴和半轴齿轮等机械零件组成。

当车辆转弯时这是非常有必要的, 可以使得转弯时外侧车轮的转弯半径大于内侧车轮的转弯半径, 而且外侧车轮比内侧车轮转得快。这意味着当汽车转弯时, 内侧车轮比外侧车轮行驶的距离要短, 这说明内侧车轮比外侧车轮转得要慢。在此期间, 维持每个驱动车轮的行驶状态是很重要的。这两个任务由差速器来完成。

例如, 如果车辆要向右转, 主伞齿轮可能旋转 10 圈。在这期间, 左侧车轮会旋转更多圈, 因为它有更远的距离要走, 而右侧车轮会旋转的圈数更少, 因为它需要行驶的距离更短。

汽车直行时，杠杆平均分配驱动力，两个圆盘移动相同的距离。汽车转弯时驱动力仍然会平均分配，但是内侧圆盘移动的距离要小一些，这使得杠杆绕中心转动，推动外侧圆盘使之移动更大的距离。这个过程表明扭矩总是平均分配给每个驱动轮，因此差速器有时也叫做扭矩平衡装置。

Lesson 11: Suspension System（悬挂系统）

阅读材料 B:

独立悬架

轿车底盘的发展应该比发动机发展得快。加速性能不断改善，最高车速和转弯车速愈来愈高，要求有更加安全的底盘，独立悬架正是适合此要求。它的主要优点是：

需要空间小；

前束的运动变化及弹性运动变化产生不足转向趋势；

易于实现驱动轮的转向；

质量小；

左右车轮互不影响。

后两个特点对于获取良好的地面附着性，特别是汽车在起伏的路面弯曲行驶时显得尤为重要。

Lesson 12: Steering System（转向系统）

阅读材料 B:

转向系统的发展

随着汽车电子技术的迅猛发展，人们对汽车转向操纵性能的要求也日益提高。汽车转向系统已从传统机械转向、液压助力转向、电控液压助力转向，发展到电动助力转向系统。

机械转向系统是指以驾驶员的体力作为转向能源，其中所有传力件都是机械的，汽车的转向运动是由驾驶员操纵方向盘，通过转向器和一系列的杆件传递到转向车轮而实现的。机械转向系由转向操纵机构、转向器和转向传动机械 3 大部分组成。

由于这种方式容易由车轮将反作用力传至转向盘，所以具有对路面状态反应灵敏的优点，但同时也容易产生打手和摆振等现象，且其承载效率相对较弱，故主要应用于小汽车及轻型货车上，目前大部分低端轿车采用的是齿轮齿条式机械转向系统。

随着车辆在生活中的增加以及人们对车辆操控性能要求的提高，简单的机械式转向系统已经无法满足需要，动力转向系统应运而生，他能在驾驶员转动方向盘的同时提供助力，动力转向系统分为液压转向系统和电动转向系统 2 种。其中液压转向系统是目前使用最为广泛的转向系统。

液压转向系统在机械系统的基础上增加了液压系统，包括液压泵、V 型带轮、油管、共有装置、主力装置和控制阀。他借助于汽车发动机的动力驱动液压泵、空气压缩机和发电机等，以液力、气力或电力增大驾驶员操纵前轮转向的力量，使驾驶员可以轻便灵活的操纵汽车转向，减轻了劳动强度，提高了行驶安全性。

液压助力转向系统从发明到现在已经有了大约半个世纪的历史，可以说是一种较为完善的系统，由于其工作可靠、技术成熟至今仍被广泛应用。它由液压泵作为动力源，经油管道控制阀向动力液压缸供油，通过活塞管带动转向机构动作，可通过改变缸径及油压的大小来改变助力的大小，由此达到转向助力的作用。传统液压式动力转向系统按液流出的形式分为：常流式和常压式 2 种类型，也可根据控制阀形式分为转阀式和滑阀式。

目前我国生产的商用车和轿车上采用的大多是电控液压助力转向系统，它是比较成熟和应用广泛的转向系统。尽管电控液压助力装置从一定程度上缓解了传统的液压转向中轻便性和路感之间的矛盾，然而它还是没有从根本上解决 HPS 系统存在的不足，随着汽车微电子技术的发展，汽车燃油节能的要求以及全球性倡导环保，其在布置、安装、密封性、操纵灵敏度、能量消耗、磨损与噪声等方面的不足已越来越明显，转向系统向着电动助力转向系统发展。

Lesson 13: Brake System (制动系统)

阅读材料:

制动系统的功能

汽车从原地起步加速到某一速度需要能量。储存在汽车中的那部分能量称为动能。要降低车速，制动器必须把汽车的动能转化为热能，转换的速度决定了汽车减速的快慢。

制动系统的部件主要包括功能装置、控制装置、传动装置和制动器。

制动系统的类型

目前使用的三种类型的制动系统是：行车制动系统，驻车制动系统和辅助制动系统。行车制动系统和驻车制动系统有独立的控制和传动装置。服务制动系统通常是用脚操纵，而驻车制动系统是手动的。

制动器的类型

现代汽车使用的两种类型的制动器是：鼓式制动器和盘式制动器。自 1976 年以来，所有的车都在前轮用盘式制动器，大多数汽车后轮采用鼓式制动器。鼓式和盘式制动器使用液压系统刹车。液压系统在每轮连接刹车踏板制动部件。

阅读材料 A:

防抱死制动系统

防抱死制动系统 (ABS) 是一个防止车轮在制动时汽车锁止的安全系统。

对于旋转的车轮，让司机紧急制动以防止打滑同时保持转向控制。在某些情况下，ABS 提供了车辆控制的改进，但是它也存在缺点，包括在光滑的表面如冰、积雪、砾石、钢板和桥梁上，或其他任何比干燥路面光滑的地方增加制动距离等。ABS 也被证明对司机会产生一种虚假的安全感。

对于最初广泛使用在生产汽车的制动系统，防锁方面大有进化。最近的版本不仅能防止轮锁，而且在电子控制时，还能防止前后刹车偏压。根据其特定的功能，这是电子制动力分配 (EBD)，牵引力控制系统 (TCS, ASR)，紧急刹车辅助 (BA, EBA, HBA)，电子稳定控制 (ESC, ESP, DSC)。

防锁功能或防滑制动系统，是为了防止车轮在刹车时锁止。最大制动力只是在车轮抱死滑动之前得到。这种防滑系统是在光滑的表面，如冰雪上，在车轮可能容易锁止时使用的。

阅读材料 B:

制动系统

制动器：它们的作用是什么？

简单的说：它能使你的汽车停下来。

复杂的说：制动器被用来让你的车减速，但可能不是你所想的意思。普遍的误解是制动器挤压制动鼓或制动片，挤压的压力作用使你的车慢下来。但这只是制动的一部分。制动本质上是一种能量改变的机制。当你在高速行驶时，你的汽车获得动能。当你踩下刹车，垫子或者鞋子对制动鼓和转子的作用转化为摩擦热能。刹车的冷却使车的热能消散，减慢车速。这是热力学第一定律，有时被视为能量守恒定律。也就是说：能量不能被创造也不能被消灭，只能由一种形式转化成另外一种。制动情况下，它的动能转化为热能。

角向力。因为在盘式制动器的刹车片和转子的位置，摩擦产生的接触点的位置也产生了一个机械的抵御转子的回转运动。

如果你驾驶过摩托车或赛车,你或许熟悉制动失效,描述当制动器太热时发生了什么。一个很好的例子就是从山上下来使用刹车制动,而不是你的引擎使你减速。当汽车开始滑动下来时,刹车使汽车产生热量,使你减速。但是如果你持续使用它们,转子或鼓将保持热度并没有机会冷却。在某一时刻它们不能再吸收更多的热量,转而使刹车片热起来。所有的刹车片都是由某种树脂压合而成的,当刹车片过热,树脂开始蒸发,形成气体。由于气体不能呆在刹车片及转子上,而是在两者之间形成薄薄的一层准备排走。刹车片失去与转子的接触,减少摩擦,这就是完全的制动失效。

工程师们是怎样设计减少或者消除刹车制动失效的?老旧的车辆使气化的气体有地方排掉。对于新的车辆,找到一些方式来冷却转子更为有效。无论你最终用交叉钻孔或者沟槽刹车盘都一样。当大力刹车时一旦一切都是热和树脂材料蒸发,槽让气体排去,所以垫可以接触转子,让车减速下来。

理解能量转换的整个关键是,刹车时是它们该做什么,以及为什么他们设计成这样。如果你曾看到过一级方程式赛车,你就可以看到向前的车轮里面有很大的洞。这是管道空气刹车部件,以帮助他们冷却下来。因为在F1赛车中,刹车每隔几秒钟频繁使用,花很多时间预留热量。如果没有某种冷却威胁,刹车就可能在最开始的几个转角失灵,最后刹车失效,赛车在一半路程出局。

Chapter 4: Automobile Electric Equipments (汽车电气设备)

Lesson 14: Lighting system (照明系统)

阅读材料 A:

照明系统发光的颜色与功能

通常,朝向后方的灯必须发出红光,面对所有转向信号的侧灯必须发出琥珀色的光(尽管在北美后转向信号会发出黄色或红色的光),面向前方的灯必须发出白色或黄色的光,除紧急救护车辆外不允许发出其他颜色的光。

机动车辆的照明系统,包括安装在车辆前面、侧面和后面的照明和信号装置。该系统的目的是为驾驶员在黑暗中安全驾驶汽车而照明,提高车辆的醒目性,并显示有关车辆的存在、位置、大小、方向,以及驾驶员旅行方向和速度的意图。

阅读材料 B:

下车后警察为何要摸一下尾灯?

如果你曾在路边被要求停车,或经常看类似《美国警察》的警匪片,你可能就

会看见警察在靠近被拦停的车辆时都会摸一下车尾灯。

识别车辆：

根据圣塔莫尼卡警察部咨询处，警察通常会用手紧按一辆车，特别是尾灯和车身，这样做是为了留下指纹以表示他曾靠近接触过该车。警察采用这种举措作为一种安全预防措施。如果该警员被袭击或“失踪”了，指纹将提供证据，并且证实那是肇事者的车。虽然大多警车里安装了摄像头，仍有许多警察采取这种物理安全防护措施。

威吓：

更为老式的警队训练方法提倡通过重拍车身或尾灯来威吓车内的司机。这招也是用来制止车内私藏非法物品的，并且帮助警员识别任何可疑物。

惯例：

现已不再提倡警察拍车尾灯了，因为这会暴露他们的行踪，使他们更容易受到袭击。

Lesson 15: Starting System (启动系统)

对话 A:

A：今天是个好天气，可我不高兴。

B：为什么？

A：我起床很早，我准备开车出去，但是我发现我的车不能启动了。你知道，我的车才刚买了几个月。

B：听到这个我很遗憾，汽车启动故障可以由很多原因引起的，让我来查查看是哪里引起的。

A：谢谢你。

B：我认为点火开关、蓄电池、搭铁电缆都没有问题的！

A：那到底是哪里出了问题了呢？

B：我想想，有可能是起动机吧。让我们来查查看起动机。

A：你这么认为吗？

B：是的，确实是起动机出现了问题。

A：那我需要换新的起动机吗？

B：是的，最好换个新的。你介意等一会儿吗？

A：没问题。多谢！

B：(一会儿后) 起动机已经装好了。

A：是的，真的可以起动了。

B：让我试一试，很好，你真的是很棒的修理师，谢谢！

B：不客气！

对话 B:

李老师：早上好，同学们！

学生们：老师早上好！

李老师：欢迎你们来到我们的实训大厅，今天就让我们来学习汽车起动系统，这是启动系统实验台。

学生们：呀……太好了

李老师：好，首先让我们来说一下你所知道的几个部件？谁先来？

肖恩：李老师，我可以试一下吗？

李老师：好的，试一试吧。

肖恩：这是点火开关！这是电池！

李老师：是的，确切的说我们称它为蓄电池。

肖恩：哈哈，我知道了，谢谢老师。

皮特：老师，我认识这个部分，它是起动继电器。

李老师：是的，这是起动继电器，剩下的部分谁知道是什么？波尔？

波尔：对不起，老师。我不知道，我……

李老师：噢，别紧张，我来告诉你们，这是起动机电缆，这是搭铁电缆，这是飞轮，这是起动机！

波尔：哪是起动系统最重要的部件？

李老师：每个部件影响着汽车起动，每个部分坏了都需要修理。

(铃，铃，铃)

李老师：下课的时间到了，下课以后你们要复习今天学的东西，下次课我要检查，同学们再见。

同学们：老师再见。

阅读材料 A:

汽车起动系统功能

发动机无自起动能力，要使发动机状态从静态转换为工作状态，必须使用动力来驱动发动机曲轴在汽缸吸入可燃混合气燃烧扩展，才能自动循环工作。曲轴在外力作用下开始转动直到发动机开始自动地怠速运行的全过程，称为发动机的起动。

发动机常用的起动方式有人力起动、辅助汽油机起动和电力起动三种形式。人力起动只适用于一些小功率发动机，在一些汽车上仅作为后备方式保留着；辅助汽油机起动主要用在大功率的柴油发动机上；电力起动具有结构简单、操作简便、起动迅速，成本低、可靠性好、具有重复起动能力，并且可以远距离控制，因此被广泛用于现代的汽车上面。

阅读材料 B:

汽车空调

汽车空调系统是实现了对车厢内空气进行制冷、加热、换气和空气净化的装置。它可以为乘车人员提供舒适的乘车环境，降低驾驶员的疲劳强度，提高行车安全。

空调装置已成为衡量汽车功能是否齐全的标志之一，汽车空调通常具备以下功能。

调节温度：将车内的温度调到人体感觉适宜的温度。

调节湿度：将车内的湿度调到人体感觉适宜的温度。

调节气流：调节车内出风口的位置、出风的方向及风量的大小。

净化空气：滤去空气中的尘土和杂质，或对空气进行杀菌消毒。

目前汽车的空调系统依据车辆的配置不同所具备的装置也有所不同，一般低挡汽车只有暖风和通风装置，中高挡一般都具备制冷和空气净化装置。目前轿车广泛采用的是冷暖一体式空调系统。其布置型式是将蒸发器、暖风散热器、离心式鼓风机、操纵机构等组装在一起，称为空调器总成。

Lesson 16: Automobile Instrument Panels and Screens (汽车仪表盘和显示屏)

对话 A:

(张先生在房间里找什么东西。)

陶小姐：你好，张先生！你在找什么？

张先生：你好，陶小姐。我在找汽车手册。我忘记“ABS”的意思了。

陶小姐：ABS？是防抱制动系统吧？

张先生：对！就是它！

陶小姐：为什么你了解它？

张先生：我了解它的作用和如何维修。

陶小姐：很好！让我来帮你吧！

张先生：非常感谢！

阅读材料 A:

仪表板上指示灯的用途是让驾驶员了解车辆运行状况。如果发生异常情况，指示灯就会告知司机，司机可以在损害发生之前寻求服务。

当使用发送单元或传感器时，指示灯使用（开/关）操作开关的功能。

在拆掉一部分固定螺丝后，仪表板可作为一个组件拆掉。在仪表板的左下侧，有一个自调连接器。它代替了大部分主要的线束连接器。一旦把它们拆除，就可以更换仪表板。仪表盘的大部分部件可以单独拆除更换，而不必拆掉仪表板总成。典型的仪表板总成系统如图所示：

1-发动机冷却液温度表

该表显示汽车冷却系统的液体温度。

2-转速表

转速表是一个衡量轴或磁盘旋转速度的仪器，如电动机或其他机器。通常在一个模拟校准刻度盘上显示每分钟转速率，但数字显示越来越普遍。

3-行程表

豪华车往往有多个行米。大多数行米将显示最大值为 999.9。行程表可以用来记录每箱燃料旅行的距离，使其非常容易而准确地跟踪车辆的能源效率；另一个常见用途是在一段旅程中把它复位到零，以便准确决定另一个司机何时替换驾驶。

4-速度计

速度计是一种测量陆地车辆的瞬时速度的装置。现在普遍安装在机动车辆上，它们开始成为在 20 世纪的选项，并从 1910 起作为标准设备使用。

5-定速巡航

巡航控制（有时被称为速度控制）是一个系统，它可以自动控制汽车的速度。该系统由司机设定以控制汽车的油门使其保持稳定的速度。

6-燃油表

燃料表（或天然气表）是用来表示一个燃料箱的燃料水平。

7-里程表复位按钮

里程表复位按钮是一种特殊的按钮，在旅途中的任何点复位，使它能够记录任何特定旅程或部分旅程的距离。

8-计程表

计程表（里程表）表示距离的汽车或其他车辆。该装置可以是电子的，机械的，

或两者的结合。

9-维修, 保养

阅读材料 B:

1. ABS 指示灯——接通电门后点亮, 3 ~ 4s 后熄灭, 表示系统正常。不亮或长亮则表示系统故障, 此时可以继续低速行驶, 但应避免急刹车。

2. 发动机自检灯——发动机工作状态的指示灯, 接通电门后点亮, 3 ~ 4s 后熄灭, 发动机正常。不亮或长亮表示发动机故障, 需及时进行检修, 或者直到系好安全带才熄灭, 有的车还会有声音提示。

3. 内循环指示灯——该指示灯是用来显示车辆空调系统的工作状态, 平时为熄灭状态。当打开内循环按钮, 车辆关闭外循环时, 该指示灯自动点亮。当 O/D 挡指示灯闪亮, 说明 O/D 挡已锁止。

4. TCS 指示灯——该指示灯是用来显示车辆 TCS (牵引力控制系统) 的工作状态, 多出现在日系车上。当该指示灯点亮时, 说明 TCS 系统已被关闭。

5. 电子油门指示灯——本灯多见于大众公司的车型中, 车辆开始自检时, EPC 灯会点亮数秒, 随后熄灭, 出现故障, 本灯亮起, 应及时进行检修, 并关闭发动机, 待冷却至正常温度后再继续行驶。

6. 安全气囊指示灯——显示安全气囊工作状态的指示灯, 接通电门后点亮, 3 ~ 4s 后熄灭, 表示系统正常, 不亮或常亮表示系统存在故障。

Lesson 17: Ignition system (点火系统)

对话 A:

A: 欢迎来到顺风汽修厂, 你需要什么帮助?

B: 我的车起动不了。

A: 让我们先仔细检查下。

B: 好吧。

A: 哦, 是点火系统出了问题。

B: 什么问题? 你告诉我具体点好吗?

A: 有个火花塞坏了!

B: 你能为我换一个吗?

A: 当然! 请您坐这等一下, 喝杯茶, 很快就好。

B: 谢谢!

(半小时后)

A：先生，您的车子修好了，您可以开走了！

B：感谢相助！

对话 B:

参考译文：(在一堂汽车英语课上)

老师：同学们好！今天我们学习电子点火系统。大家有问题吗？

学生 A：请问老师，它和传统的点火系统有什么区别？

老师：其实，它和传统的点火系统区别很小。

学生 B：请问老师，您能告诉我们它们的区别是什么吗？

老师：哦，是的，它们的区别在于分电器。它使用电枢、传感线圈（定子、传感器等）以及电子控制模块来代替分电器凸轮、断电器金属板、断电器触点和电容器。

学生 B：谢谢老师！

老师：还有什么问题吗？

学生：没有了。

老师：那么，下课吧！

阅读材料 A: 无分电器点火系统

有许多不同的点火系统。这些系统中大部分可以分为三种类型之一：传统触点式点火系统（使用自 20 世纪初）、电子点火系统（流行的自 70 年代中期）和无分电器点火系统。

点火系统的第三类是无分电器点火。火花塞直接从发射线圈点燃。点火正时由点火控制单元（ICU）和发动机控制单元（ECU）控制。无分电器点火系统可能每缸有一个线圈或者每对汽缸有一个线圈。时下一些流行的系统使用每两缸一个点火线圈。这种类型的系统被称为废火花的分配方法。在这个系统中，每个汽缸与另一个汽缸反向配对，其点火顺序是（通常是 1-4-2-3 对 4-缸发动机或 1-4-2-5-3-6 对 V6 发动机）。

每个点火线圈次级导线两端分别连接到配对汽缸的火花塞。这两个汽缸上的火花塞同时在上死点（TDC）。但是，它们是成对的对立，因为它们总是在 4-冲程发动机循环的相反端。当一个汽缸到了压缩冲程（TDC）的死点，另一个是在排气冲程的上止点。位于压缩冲程的汽缸被称为事件缸另一个叫一个排气冲程缸、垃圾缸。当线圈放电，两个火花塞同时点燃完成串联电路的工作。

由于初级和次级绕组的极性是固定的，一个火花塞总是在前进方向点火，而另

一个则是相反的。这不同于传统系统，传统系统是每一次所有火花塞都在相同方向点火。由于对额外的能量需求，线圈设计、饱和时间和初级电流也不同。这个设计系统允许从分电器线圈得到更高的能量，在转速范围内它大于 40kV。

无分电器点火系统使用一个磁曲轴位置传感器，凸轮轴位置传感器，或两者都用，来确定曲轴位置和发动机转速。这个信号送至点火控制模块或发动机控制模块，然后传给适当的线圈。

无分电器点火系统，在理论上的优点是：

1. 不定时调整。
2. 无分电器盖和转子。
3. 没有运动部件磨损。
4. 没有分电器就不会积累水分造成起动问题。
5. 无分电器驱动就会使发动机阻力减少。

无分电器点火的主要组成是：

1. ECU 或发动机控制单元。
2. ICU 或点火控制单元。
3. 磁性触发装置，如曲轴位置传感器与凸轮轴位置传感器。
4. 线圈组件。

Lesson 18: Sensors for chassis and body systems(底盘和车体系统)

对话 A:

参考译文：

简：昨天你听了史密斯教授的讲座吗？

朱迪：没有，关于什么内容的？

简：是关于车身系统零部件问题方面的讲座。

朱迪：哦，车身系统零部件质量对汽车的整体性能来说非常重要。听说日本丰田因为油门踏板出了问题已召回 700 多辆不同型号的车。

简：是呀，教授也提到了这个案例。

朱迪：对于这个案例，教授是怎么说的？

简：他认为这暴露了全球化产业链的潜在危机。

朱迪：啊，这么严重？

简：是的。丰田的油门踏板由主要生产感应器的美国 CTS 公司制造。CTS 只负责按图生产，丰田提供产品设计和完成产品组装。

朱迪：呀，超出我的想象。可丰田是个大公司啊！

简：事实上，所有的汽车生产大厂都不再自己制造零部件，而只控制设计和完成整车组装。每个外加工的零件都有合理误差范围。当它们被置入一个庞杂的汽车系统中后，单个零件的误差不断被放大，发生问题的可能性也随之放大。

朱迪：太可怕了。这是全球的大公司都应该考虑的问题。

对话 B:

参考译文：

A：看这个图片，你应该认识这辆车。

B：是的，2004 款雪铁龙 C5。

A：画出来的是哪个部件？

B：是其第三代主动液压悬挂。

A：你懂吗？

B：我的老师以前教过我们。液压式可调悬挂就是利用液压变化来调节车身的悬挂系统。它的核心部件是一个内置式电子液压集成模块，可以根据车辆行驶速度对减震器的伸缩频率和程度加以调整。

A：哇……你知道的比我都多。

B：哈哈……不相信，对吧？

阅读材料 A:

电子稳定系统

当 ESC 查出转向失控时，ESC 就会自动使用制动装置以助于调整司机正要开动的汽车。根据情况的不同，刹车会自动应用到单个的车轮上。ESC 一般包括牵引力控制及 ABS（防锁死刹车系统）电子系统，它们使用若干个传感器，例如车轮制动转向角传感器、偏航率传感器、横向加速度传感器和车轮转速传感器以监测车辆行驶的方向和驾驶员的意识判断。ESC 不可以擅自改型，在销售前需装备好。

ESC 证明是安全的系统。至少 40% 的致命的车祸都是由于侧滑引起的。国际上的研究显示根据路况的不同，ESC 降低了 25% ~ 35% 的侧滑事故。虽然电子稳定控制系统官方地被缩写为 ESC，但根据汽车的品牌的不同，此技术可被指为 ESP（电子稳定程序），DSC（动态稳定控制系统），VSA（车辆稳定辅助系统），VSC（车辆稳定控制系统）或其他替代名称。不幸的是，ESC 不总是作为标准或必有的设备安装在所有的汽车上，在购买前应向供应商询问更多有关于 ESC 的信息，是否你的车安装有这种设备或可以选择安装。

要想安全，你就永远不要关掉 ESC。当开通点火装置时 ESC 一直开通。有些车允许该系统手动关掉。关掉的话仪表盘的警示灯会有显示。建议行车时一直让 ESC 开着，除非开着会阻止车辆从滑坡、斜坡或其他类似的情况中拽出来。

阅读材料 B:

混合驱动汽车

混合驱动汽车就是使用两种或多种性质不同的动力源驱动的汽车。该车通常指混合电能汽车 (HEVs)，是把一个内燃发动机与一个或多个电马达结合起来使用的电能汽车。

相比传统的内燃发动机汽车 (ICEVs)，混合驱动汽车一般会使燃料使用更经济、废气排放量更低。这些优点主要通过下面的典型的混合设计的因素实现。

1. 根据发动机和电动马达需要的最大功率，把发动机尽量做小，更多使用平均功率而不是最大功率。较小的发动机内损减少而重量减轻。

2. 电池拥有超大的储存容量，特别是在城市内频繁起步交通行驶过程中可以储存并把被浪费掉的能源收集起来再度使用。在制动过程中回收了大量的一般情况下像热量一样被浪费掉了的能量。以马达或发电机的功率为依据，这种再生的制动通过把一些能动的能量转化为电能而降低了车速。

这些特点使得混合驱动汽车对于频繁起步、滑行、怠速的工况时的城市交通特别有效。另外，与传统内燃机汽车相比，特别是处于怠速、低速的工况时，噪音排放减少。当处于高速公路的工况时，这些特点在减少噪音排放方面作用会小得多。

乐观的看法认为预计在未来 10~20 年混合驱动汽车会主导美国及其他地方的新车销售市场。综合分析说明对于混合驱动汽车来说要占到美国汽车拥有量的 80% 至少需要 30 年。

Chapter 5: Automobile Repair and Maintenance (汽车保养与维修)

Lesson 19: Maintenance and Repair (保养与维修)

对话 A:

A: 为什么车子的发动机过热?

A: 您好! 女士, 有什么忙要我帮吗?

B: 可能我的车的发动机出了问题, 它太热了。

A：我来查一下。

B：好的。

A：是呀，它还很烫，您去哪了？这儿有沙子。

B：我们刚回来。上午去了一个度假村，走了很长一段距离的沙子路。真倒霉！

A：好的，我看一下。

B：有什么问题吗？

A：你看，车吸进去了不少沙子，可能损坏了水泵推进器，所以不仅要重修水泵而且有可能得冲刷制冷系统除去沙子。

B：听起来很严重，没办法，只能修了。

A：好的，我们再仔细检查一下，尽快修好。

B：谢谢！

A：对了，记得下次如果再出现这种情况先关掉发动机，修了以后再开车。

B：多谢了！

对话 B:

参考译文：

玛丽：汤姆，你看昨晚的新闻了吗？

汤姆：有什么事？

玛丽：一辆大巴在高速公路行驶时自燃了。十多人死于火海。

汤姆：太可怕了！真难过。什么原因造成的？

玛丽：报道说这辆车跑了很长时间的路，很长距离，车胎出了问题。事实上，确实是车胎自燃才引起了火灾。

汤姆：太遗憾了！司机应多注意车辆的维护保养。例如，一个月至少检查一次胎压。这是预防车胎意想不到漏气的最好的办法。

玛丽：我也是这么想的。现在咱这儿已是秋天，过不了多久冬天就来了，随着温度降低，现在是采取预防措施保养车的最佳时候。

汤姆：是啊！除了轮胎，我们还应对车闸及蓄电池进行保养。在下雪之前，对汽车的主要系统最好进行一次彻底的检查。

玛丽：我同意。我要多学点有关车辆保养的知识。你在这方面怎么样？

汤姆：有时我会从网上学。

玛丽：网上，真的？

汤姆：当然啦。互联网可以提供大量的有关车辆维护保养的知识。例如，当你试图发动车时车起动偏慢，那是因为天气冷起动有困难。当车闲置时，前灯就会昏暗，那就检查一下电池。当你买轮胎时要知道，所有的四季可用的子午线轮胎设计

虽然可用于干的和湿的以及有雪的路面，而功能性轮胎抓地更有劲儿。

玛丽：天呀，你简直像一个汽车专家！

汤姆：是吗？如果你多花一些时间上网了解一下汽车保养的话，你也会懂很多。

玛丽：好主意！

阅读材料：

汽车修理工拥有多种技能和经验才有资格就业。初级水平的汽修工工作竞争很激烈，所以，大多数雇主更愿意雇佣那些有工作经验的人，或是实习结束以后，亦或是在高中或是职业学校正式接受过汽车服务和技术培训课程的人。

有志于从事汽修行业的高中学生要做好准备学习以下课程：物理、化学、英语、计算机、数学。有些高中也通过给学生提供学习技术学校的贸易及技术课程的机会，培养学生学习汽车修理的能力。大多数高中毕业生提升自己是通过完成实习课程，继续学习取得资格证书，在社区大学学习或接受汽车制造厂或汽车特许经销商提供的培训。进入贸易职业学校学习的同学一般要经过六个月的动手操练及教室指导学习才能获得所要求的知识和经验。一些社区大学会提供学习一年的汽修课程的资格证书及两年学习汽修相关的课程的学历证。课程大体有：基础数学、英语、计算机、客户服务及相关的业务课程。大多数汽车制造厂或汽车特许经销商主办的培训课使得学生们专职上班同时获得岗位培训来参加学习，除此之外，还在教室学习理论和技术。

学徒课程教授学生的是作为实习技工、润滑工或技工助理初入汽车行业开始就业的能力。每个学徒工一般都与技术高超的修理工和技术人员一起密切工作以提高技能。他们从简单的修理和服务任务开始，并且随着技术的提高发展到从事更为复杂的工作。在他们发展到熟练工水平，即完全有资格承担汽车机修工的工作之前，学徒课程一般要求两到五年的岗位训练。

汽车技术相关学历课程向有志于成为汽车机修工的学生提供了对这个领域及晋身到各个部门所要求的技术技巧方面的更为广阔的了解。汽修工可以学习汽车技术管理方面的学士学位的课程以提升自己的知识及技巧。

以上的课程的学习能够使得汽修工适应日益复杂的、高水平的技术要求以解决一些机械或电气方面的问题。

Lesson 20: Automobile Testing Instrument (汽车检测仪)

对话 A:

A：欢迎来到环宇汽修厂，你需要什么帮助？

B：我的车起动不了。真是破车。

A：坚持下，在你踢车之前我们先仔细检查下一些可能存在的问题。

B：好吧。

A：首先，你转动钥匙来点火了吗？

B：是的，我和朋友在一起，他认为可能是火花塞或起动电动机的问题。

A：这些都可能存在问题。但是你先告诉我，当你转动钥匙时，你听到发动机转动了吗？

B：是的，声音听起来和平时发动车子是一样的，但是车并没有发动起来。引擎发动不起来，我应该踩油门吗？

A：不要。如果你踩油门，汽化器会出问题，车子就起动不了。

B：你认为是什么问题？

A：我知道这听起来很愚蠢，但是你的车还有油吗？

B：是的，车发动起来了。谢谢你的帮助。

对话 B:

迪恩：嗨，要我帮忙吗？

亨利：喔，对不起要麻烦你，我的汽车发动不了了，我的车就是不能发动，我不知道为什么，它就是发动不起来，你能帮我吗？

迪恩：好的，我们先看看好不好？我试试看。不过，你最近一次检查车子是什么时候？

亨利：差不多一个月以前，那时车子状况良好。

(几分钟后)

迪恩：哈，我找到问题所在了，是电池的问题。电池没电了，现在好了。你开着车稍微转一下，让电池充电。

亨利：好的，谢谢你的帮忙。这是给您的。

迪恩：不，不，有急事时不帮忙那还要邻居干什么？

阅读材料:

汽车数字万用表

数字万用表是进行故障诊断及诊断汽车各个零部件的重要工具之一。万用表有两类，即数字万用表和指针万用表。指针万用表有指针显示，而数字万用表则有LCD或LED显示。现在的车辆中更多使用数字万用表，但指针万用表仍然可以发挥作用。

以前的仪表多用于检查电池和闭合角。机械师不带万用表尚可度日，但如今的情况则不一样了。现在，万用表已成为工具箱里必不可少的一部分。

所有的万用表都可用于测量电压、电流和电阻，这是在诊断故障时最常用的三个功能。在购买数字万用表时，最重要的首先是要看仪表的阻抗，即仪表的运行阻力。大多数数字式万用表具有非常高的阻抗。由于仪表是被测试电路的一部分，其电阻会影响到该电路的电流流过。

典型的电流强度测试

如果数字万用表具有极高的阻抗或电阻，就会导致电路的电流略有增加。这在检测电子系统时很关键，因为增加的电流消耗会损坏被测试的零件，至少是改变读数或改变传感器信号。你要拥有一个至少 $10\text{m}\Omega$ 兆欧阻抗的仪表，也就是说它们的电流消耗极低而变得不可见。

在使用数字万用表进行测试之前，你需要知道你在测试什么以及你在寻求什么样的结果。如果你在寻找伏特，你需要选择进行测试的适当的范围。如果你想得出 12V 这一结果，你就要选择范围高于 12V 的仪表，比如， $0\sim 25\text{V}$ 范围内的仪表就合适。而 $0\sim 500\text{V}$ 的仪表得出的结果就不那么准确了。

几乎所有的数字万用表都有一个“自动量程”功能，它会自动选择适当的范围。一些数字万用表会让你重写此功能，并让你手动选择你想要的范围。而另外一些则没有这个选择并且必须要手动确定。检查数字万用表附带的文档，确保你了解它们不同的使用范围。

大多数具有自动量程的数字万用表会在读数前后进行设置。欧姆用于测量 10 的倍数，指定 K 或 M ，其中 K 代表 1000Ω ， M 代表一亿欧姆。安培将显示为 MA ， mA ，或千分之一安，伏特将显示为 MV 或 V 。当你读取带自动量程的数字万用表时，务必要注意该仪表的使用范围，你可能会把 10MA 误读作 10A 。

Lesson 21: Reading Materials of Present Automobile Technology (现代汽车技术阅读材料)

对话 A:

W: 嗨，托尼，你怎么了，看不上不开心？

T: 哦，王老师，我上节课耽误了，我对汽车排放控制系统还不是没明白。

W: 哦，你别太着急了。一两句话也讲不清楚，但是你可以仔细研读课本，首先要对汽车排放的有害物质有个初步了解。

T: 我知道汽车排出的有害物质主要有碳氢化合物、一氧化碳、二氧化碳、氮

氧化物、二氧化硫、磷、铅，以及其他重金属。排放控制系统控制汽车的排放物和排出的废气。

W：你课下还是下了功夫的。汽车排放控制装置可以降低一氧化碳和碳氢化合物的排放。那么，你了解安装在汽车上与排放系统有关的装置吗？

T：抱歉，我只知道有排气管和催化转化器。

W：除此之外，还有消声器、排气尾管、EGR 阀、PCV 阀、空气泵以及活性炭罐等。了解这些装置对你弄明白排放控制系统的工作原理至关重要。

T：嗯，谢谢你，王老师。我会继续努力的。

阅读材料：

智能运输系统

智能运输系统是一种多样化、应用范围广的技术。ITS 可应用在公路、街道、桥梁以及层出不穷的交通工具包括轿车、公共汽车、货车和火车等这些庞大的运输基础上。

简单的说，ITS 涉及现代技术和管理策略在路面交通系统中的综合运用。更具体地说，ITS 包括许多不同技术的装置：计算机集中控制的交通信号；可以使驾驶员无需在缴费岗亭前停车的电子缴费标签；变化信息的信号灯提供有关下一趟巴士、火车或前方大致的交通情况；语音导航系统通过卫星技术对在途中的驾驶员进行逐步方向指导。

ITS 能够有效并安全的确保人员和物资流动。智能运输系统为有技能的运输业专业人士提供了工具。这些工具用以收集、分析、保存关于系统运行的数据。拥有这些数据提高了交通运行者对事故变化、不利天气或者其他交通流量受限等事件做出反应的能力。

这些信息和通信技术可以用于更好的管理和改进运输提供者（政府、运输机构和货车驾驶员）给公众提供的运输服务。将它应用到当前的运输系统中时，它可以帮助提高安全性、减少交通阻塞、提高机动性、将对环境的影响减到最少、节省能量以及提高生产率等。

ITS 的发展前景广阔，除了它是属于未来派的外，几乎可以完成一切事情。现在的实际的系统、产品、服务已经在全国范围内使用。尽管如此，将这些技术广泛的开发使用到交通运输上也会是一场真正的革命。

全球定位系统

全球定位系统是一种以人造卫星为基础的无线电导航系统。GPS 使得陆运、海运和航空运输用户可以在一天 24 小时内、任何天气条件下、世界任何地方确定他

们的三维空间位置、行驶速度和时间。GPS 比在当今和可预见的未来中可用的其他无线电导航系统要更加精确和准确。GPS 由三个部分组成：空间部分、控制部分和使用者。

空间部分由 24 个运作的人造卫星组成，这些卫星分布在 6 个圆形轨道上，距离地球 2.02 万公里、倾角 55° 、12 个小时运行一周。24 个卫星分布在 6 个轨道上，就可以使世界上任何地方的使用者在任何时间最少可被 4 个卫星覆盖。卫星不断的将位置和时间传送给世界各地的使用者。目前有 27 颗人造卫星在轨道上运行，其中 3 颗是备用卫星。这三颗是用以确保其他 24 颗人造卫星的正常运作。

控制部分由一个主控站与分布于全世界的五个监测站和三个上传控制站组成，检测站跟踪检测范围内的所有 GPS 卫星并收集这些卫星所发送的定位信息。监测站收集每个卫星上的信息，然后将这些信息发送到主控站，在主控站里计算出每个卫星的非常准确的飞行轨道。这些信息又将被转成每个卫星所使用的最新导航信息，这些最新的信息经由上传控制站传送给每个卫星。这些上传控制站同时也传送和接收卫星控制和监测信号。

使用者部分由接收器、处理器和天线三个部分组成，这三个部分可使陆海空的操作者收到 GPS 卫星广播，并计算出他们精确的位置、速度和时间。GPS 的操作观念是建立在人造卫星定位基础上的。使用者经由测量与卫星群的距离从而确定自身的位置。人造卫星担当精确参考点的角色。每一个 GPS 卫星发送一个准确位置和时间信号。使用者的接收器测量信号到达接收器的延迟时间，也就是直接测量与卫星的距离。测量结果同时从四个卫星收集，经处理后来确定三维位置（纬度、经度和高度）和时间。

GPS 可以应用于陆地运输、航海运输和航空运输的导航、测量、地球物理学探测、地球测绘、大地测量学、车辆定位系统、交通运输系统，以及多种其他的领域。

Chapter 6: Automotive culture (汽车文化)

Lesson 22: Automotive Movies (汽车电影)

对话 A:

T: 嗨，过得可好？

P: 非常好，谢谢！

T: 你这是要去哪儿？

P: 哦，我要去电影院。南希和我都想看《速度与激情 5》。

T:《速度与激情 5》,我也很喜欢。我还喜欢里面的保时捷跑车。

P:我也是,“速度与激情”系列电影总是会出现保时捷。

T:是的,保时捷可是世界上最成功的品牌了。

P:最近,我还听说保时捷博物馆在举行 60 周年会展。

T:我也听说了。会展展出很多车型,还会有许多珍贵的照片。

P:没错,博物馆每周二至周日上午 9:00 至下午 6:00 开馆。

T:不错,是免费的吗?

P:不是。

T:多少钱?

P:成人票 8 欧元,儿童票 4 欧元。

T:好极了,也许哪一天我们可以一起去那里看看。

P:是啊,不过现在,你愿意和我们一起去看电影吗?

T:好啊,为什么不呢?让我们一起去吧!

阅读材料:

《生死时速》是 1994 美国动作片由扬德邦特执导,基努李·维斯、桑德拉·布洛克、丹尼斯·霍珀、乔·莫顿和杰夫·丹尼尔斯主演的。《生死时速》在 1994 取得了巨大的成功。它在当时的社会影响力很大,严格说来,这确实是一个很好的电影。它是关于一辆公共汽车上的炸弹的高概念电影,被认为是桑德拉·布洛克的突出角色。它的票房在美国是 121248145 美元而且全球是 350448145 美元。在 1995 年《生死时速》赢得了最佳音响、最佳音效奖。这部电影也被提名为奥斯卡最佳电影剪辑奖。

影片的剧情简介:杰克特拉文和他的伙伴哈利·坦普尔是洛杉矶特警队爆破专家。他们是上班族,被困在一个市中心高层楼的电梯里。霍华德佩恩,一个曾是亚特兰大格鲁吉亚炸弹队的炸弹专家,已经告诉他们都会被炸得粉身碎骨除非他能成功。特拉文解救了人质,但佩恩逃脱了。后来,一个早上,特拉文见证一个城市公共汽车爆炸的全过程,司机被炸死了。特拉文拿起附近的付费电话,只听见佩恩警告说,在另一辆装满了无辜的乘客的公共汽车里安装了炸弹。当公交车达到每小时 50 英里的速度,子弹达到临界值。如果车的速度小于 50 英里——或者任何乘客都下车,或如果赎金不在约定的时间交付——炸弹会爆炸的。一个乘客,他是暴徒,害怕被逮捕,并掏出一把枪意外伤着了司机,所以乘客安妮代为开车,特拉文向总部无线电取得联系,并计划救援。安妮完美地完成了工作,她目前还没接到超速罚

单。公共汽车必须保持速度超过 50 英里每小时，所以它给警方护送扫清了道路，直到它重新从马路回到机场的跑道。然后特拉文、坦普尔和佩恩展开了一场猫鼠游戏。

Lesson 23: Automotive Advertisements (汽车广告)

对话 A:

坦尼亚：早上好，Carla。你今天过得怎么样？

卡莱：我很好，你呢？

坦尼亚：很好，谢谢。我们公司的广告宣传做得怎么样了？

卡莱：正如我以前所提到的，我们上个月开始了全国范围内的宣传活动。所有看见这个广告的人都认为它太棒了。

坦尼亚：那是什么样的？

卡莱：场景是这样的。男子开着一辆车，走上了桥，从桥上开了过去，我们修了一座桥你才能过来。大家都认为它是一件艺术品。也许艺术就是技术。修建你认为不可能的路，创造你想象不到的汽车。欧宝，动态的电力艺术品。

坦尼亚：似乎是个完美的广告。

卡莱：当然。谢谢！

阅读材料：汽车广告语的有效性

广告是由特定的出资人对观念、产品或服务，采取的有偿性的并非针对个人的推介和促销形式。广告是传播信息的一种低成本的方法，无论是建立品牌偏好或是教育人。它或许是经销商的一个工具，可以使用这个工具来促进他或她做成生意，包括销售、服务、配件、车身车间，或其他相关产品和服务。

在现代社会里广告到处可见。当你走在大街上，你看到大的广告招贴板上画着的漂亮小姐向你微笑；读报时，你发现一半的板面都是广告；打开电视机，你还会看到广告。不管你喜欢不喜欢，广告每时每刻都在涌入你的生活。

现在登广告的人还想出几百种使我们赢得巨款的比赛。不但提供免费样品，而且提供免费汽车，免费住房乃至免费出国旅游。他们发现我们所有的人都喜欢不出钱而得到东西。无线电和电视机已经使登广告的人有可能利用这种办法来吸引千百万人的注意。

但是，并非所有的广告都真实可靠。某些广告产品证明是骗人的，或者说产品与广告不符。有些广告诱惑消费者花钱买那些他们并不真正需要的东西。因此，消费者自己的正确判断才是必要的和基本的。

所有经销商的汽车广告，无论使用印刷品或广播，语言应平实、明确、重点突出，且不可有欺骗性的表述。欺骗可能会导致广告里的直接陈述或合理的推论，或与免责条款相矛盾、混淆，有不合理的限制或重大修改信息。欺骗，也可能导致失败并且明确地披露许多材料的事实，包括限制、免责声明、资格、条件、排除或限制。

新车或二手车的广告——包括轿车、越野车和轻型卡车的任何广告，由纽约州的经销商出售或租赁必须遵守纽约通用商业法，由这个法律来定义并禁止“虚假广告”。

在制定广告计划的过程中，营销经理必须陈述目标市场和买方的动机，然后制定五个重大决定，被称为“五个M”：

确定目标：广告的目标是什么？

预算决策：可以花多少钱？

信息决策：应该发送什么样的信息？

媒体决策：应使用什么媒体？

评价目标：应该如何评价？

Lesson 24: Automotive Sports (汽车运动)

对话 A:

A：这周末有什么安排吗？

B：我要到万事达中心去看一场篮球比赛。

A：篮球赛？很让人激动啊！

B：NBA 的年度冠军迈阿密热火队将和洛杉矶快船队参加 2012 赛季的中国站比赛。

A：真棒！

B：你喜欢体育运动吗？

A：是的。我比较喜欢赛车。

B：赛车我还真不太懂。

A：那你听说过 F1 比赛吗？

B：听说过，但不知道什么意思。

A：这是国际汽车联合会赛车一级方程式世界锦标赛的缩写。

B：最厉害的车手是谁啊？

A：F1 比赛的第一人当然是舒马赫了。他是著名的德国一级方程式赛车手，被

称为 F1 之王。他现在是法拉利车队的车手，他赢了九十多场比赛，并获得过 7 次总冠军。

B：中国有 F1 比赛吗？

A：有。上海从 2004 年起成为了 F1 的一比赛站点之一。

B：我希望有一天能去看看 F1 比赛。

阅读材料：

从第一辆车到现在的车

汽车是当今世界不可分割的一部分，无数辆汽车在各个角落装点着世界。汽车的诞生以及它多年来的周期性演化确实是一个非常有意思的课题，值得深入研究。人们认为，我们今天在路上看到的汽车是十万多项专利的成果！

据说，第一辆真正的汽车在 1885 年才出现。直到那时，蒸汽动力车辆仍在使用。虽然人们认为早在 1672 年由费迪南德 Verbiest 发明了蒸汽动力汽车，但是今天几乎没有信息证明他的创造。目前人们普遍认为是法国工程师和技师，尼古拉斯·约瑟夫 Cugnot 在巴黎阿森纳建造，其蒸汽驱动的军事拖拉机，曾被法国军队用作运送武器和弹药。

在第一个汽油动力汽车发明不久之后，赛车运动就开展起来了。第一个汽车比赛是对新兴的汽车制造商良好的宣传，因为它给了他们一个机会来展示他们汽车的速度和操控性，希望吸引人们去购买他们自己的汽车。第一次有组织的比赛是在 1894 年 7 月举行的法国巴黎和鲁昂城市之间。获胜者是从 25 名参赛选手中基于速度、安全性和操控能力评选出来的，而不是简单的看谁在最快的时间完成比赛。由驾驶标致 Georges Lemaitre 和驾驶潘哈德的 René Panhard 并列冠军。

1895 年，第一个巴黎—波尔多—巴黎计时赛举行，并于 1897 年在法国尼斯建立了世界上第一个专用赛车场地，展示了自己的“速度周”。同样是在 1895 年，美国的第一场比赛在芝加哥举行，从城市的南边沿着海岸线到伊利诺斯州的埃文斯顿。

1907 年，第一个专用环形赛道始建于英格兰的布鲁克林，由一个三英里混凝土表面和陡峭的倾斜的弯道构成。这个设计的灵感被认为是来自印第安纳州印第安纳波利斯赛道。尽管布鲁克林赛道首次专门为赛车建立，第一个最适合赛车用途的是威斯康辛州的密尔沃基。今天，密尔沃基英里是世界上最古老的赛道，主办了自 1903 年以来超过 107 场汽车比赛。

到第一次世界大战的结束，汽车的速度和特色的空气动力学已经得到了进一步的发展，而且改进到更强大的发动机。正是在这前后，赛车开始形成各自独立的学

科分支。

赛车的速度和竞争多年来吸引了很多的车手和观众。在欧洲赛车手的带领下，美国人紧随其后也追求这项冒险运动。印地赛车、F1 方程式赛车、冠军方程式赛车、纳斯卡赛车及其他多种形式的赛车已经发展起来，引发了国际赛车行业数百万的车迷的激情。到 2012 年，赛车是全世界最多观众的体育运动之一。

Lesson 25: Automobile History (汽车历史)

对话 A:

参考译文：

张小姐：你好，李先生！你上周末干什么了？

李先生：噢，我去看车展了，最大的西湖车展。

张小姐：是吗？一定非常棒吧？

李先生：棒极了！我见到的最好的车就是丰田概念车。它是一款燃料电池电动车，这是它独特的地方。这款车非常漂亮舒适。

张小姐：我明白了。因为它们是环保车，所以这种车代表了汽车的未来发展方向。

李先生：你说得对，这个车展要举办到本周日。你也可以去看看。

张小姐：好主意！我还要多照几张相。

阅读材料：

未来的汽车

作为当今世界上最重要的私人交通工具，汽车是检验一个城市发展水平的关键因素。有四个方面与未来汽车有关：智能性——汽车的 CPU 将直接和一台计算机的 CPU 连接。

节能性——随着人们环保意识的增强，传统的燃油发动机一定会被诸如电动发动机这类新型实用的发动机所代替。舒适性——不仅内部空间舒适，而且驾驶简便。安全性——在设计实用车型时，将优先考虑诸如 ABS 这类安全系统装置。

在未来的汽车上，我们会拥有自动驾驶开关。ABS 就是汽车的首要系统。ABS 帮助司机平衡对车轮的刹车力。电子装置则决定气囊何时充气。

只要做出了简单的决定，计算机就会马上执行任务。今天我们已经有了计算机制作 3D 画面的知识。我们可以电子自动检测距离。计算机能对高速公路一览无余。问题是计算机导航车无权犯错误，厂家是要负责任的，所以全自动驾驶在不远的将来就能实现。

逐渐地，考虑到诸如天气、路况以及我们周边的交通等外部因素的巡航系统和GPS都将装配到车上。尽管汽车上装有能帮助我们在行驶中不与前面急刹车的汽车相撞的系统，我们并为之庆幸，但自动驾驶要复杂得多。

下面的概念车就代表了未来汽车的发展趋势。雪铁龙 C—空中梦幻：这款车的最精彩部分就是采用了无线电驾驶系统，它的转向系统和刹车系统可以由计算机操控。

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